California Regional Water Quality Control Board

San Francisco Bay Region

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Item 11. Trash Load Reduction Requirements of the Regional Municipal Stormwater Permit Workshop to Discuss Implementation of the Trash Load Reduction Requirement

P R O C E E D I N G S

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(Recess at 12:05 p.m.)

(Reconvene at 1:11 p.m.)

CHAIRMAN MULLER: We're trying to get started he a couple minutes late, but there's a lot of visiting and a lot of expertise in the room, so I know you guys have all the problems solved, but we're going to keep working on it.

I do have a lot of cards and so I think some of the groups have put them together in order and I'll do the best I can for following through and time-wise, we're all going to do our very best.

And it's interesting we're talking about trash, I'm kind of a practical guy, and so I come over early this morning and on the east side

and the west side of our beautiful State Building, there's about 112 pieces of trash out there. So that's right next door to us, and I did a sheep herder count. And we figured we might as well start it out -- I took this photo and, of all people that should know better, is Starbucks. I don't mind picking up trash from Burger King and things like that, but Starbucks people should have a little higher education when it comes to trash, so I'm sorry to pick on Starbucks because I do visit them every morning at 5:00, so….

Anyhow, we'll get started here. We have a very full schedule this afternoon and we're kind of going to quickly go, a tentative schedule with Water Board, Water Board staff, I don't know, do you have a copy of this? Or do I just have a copy of this? Everyone does? Oh, just me and the Vice Chair. And San Francisco Estuary Partnership, and then our NGOs in the Environmental, and then industry, other parties, and various stormwater management municipalities, and kind of Water Boards and questions. And just for all of our information, this is not the end of our discussion today, we are going to go hard

and fast as we can through the day, but we will continue on into December.

Also, I'm not drinking Diet Coke, but I went through my archives as 12 years of Chair of the Regional Board, what do you get? And I don't know if anyone has ever seen this, but this is a Diet Coke can and it says, "Be the Solution to Water Pollution, Be Wise," and it's labeled on here -- I don't know if Bruce or anyone has one of these left, so we collectors and the pickers will come by my life someday and say, "Boy, that's worth some money," but I thought you'd get a kick out of that one there, I don't know if you guys have ever seen that before. We like to save things in our world. It even has dust on it, so it's going to be more valuable.

VICE CHAIR YOUNG: It's going to explode.

CHAIRMAN MULLER: Terry is afraid it's going explode. Anyway, here we go. And we'll be as generous and fair to everyone, as I always have been, or we always have been with time, but remember, I'm the Chair, and when it's time, it's over, move on. So Water Board introductions at this point? We will start with our staff,

correct? Oh, I'm sorry, okay, yes, Vice Chair.

Item 11. Trash Load Reduction Requirements of the Regional Municipal Stormwater Permit Workshop to Discuss Implementation of the Trash Load Reduction Requirement.

VICE CHAIR YOUNG: Thank you, Mr. Chairman. This is one of the issues that I think affects all of us, and that all of us have been following, but in particular, Mr. McGrath and I have been very interested in following the implementation of part of the Municipal Regional Permit that deals with trash. It's Section 10 -- you guys can find it on the website and we had a pleasurable reading experience -- but briefly, and this overview might be old news to most of the people in this room, but hopefully you will live through it, we have four basic requirements in the Municipal Regional Permit for Trash, one is an overview requirement that sets performance standards, which is a 40 percent reduction in trash from when we adopted the Permit in 2009 to 2014, a 70 percent reduction by 2017, 100 percent reduction by 2022.

The second basic requirement was for the Permittees to set up a compliance monitoring

system that allowed us to track these reductions that we were requiring. The third basic part was that they should design and implement a program to achieve these reductions, that's the core, I think, of the requirement, and then we had some specific actions related to hot spots in the installation of full trash capture devices in a few areas.

What we're going to hear today, I think, is a lot of information that will tell us how the design and implementations of the programs have been going, but we do have a glitch in the implementation which centered around the compliance monitoring requirement. And the Board staff did send a letter to the Permittees dated June 7, 2012, so last year in June, saying that basically at that point in time they were not in compliance with our permit requirements for the Compliance Monitoring Program. And to my knowledge, we're still in that state of affairs.

So the purpose number 1 of this workshop was to talk about how we get to the development of a Compliance Monitoring System that's based primarily on measuring the amount of trash that flows from stormwater into Waters of the State;

in other words, our bailiwick is the Waters of the State, we don't have to worry about what happens everywhere on land, we just are concerned about what is going from the stormwater into the Waters of the State.

A second purpose of the workshop is to figure out how the Water Board should go about assessing compliance with this 40 percent reduction requirement, and then subsequently the 70 percent reduction requirement since we don't have the monitoring system that we were hoping to rely on to do that, so we're going to have to use the weight of evidence approach. And one of the purposes of this workshop was to elicit input from all of the interested parties across the Bay Area to see what we should have in that weight of evidence approach and how we might construct it.

So I don't want to go on any longer, but that was kind of the genesis of this workshop, in addition to the fact that several of the interested parties approached us and said, "We really want to have some input into what's going on and we want to have a workshop so we can also be heard, and the four years of implementation is not just a conversation between the Water Board

and the Permittees." So that's more or less why we're here. Jim, did you want to add to that?

MR. MCGRATH: I do. I'm going to say a couple things. First of all, I've been on the surface of the San Francisco Bay about 124 days this year, three days in a kayak and 121 days on a windsurfer, but who is counting? And I do that, you know, 120 days in a good year, 130 days. My top speed on a windsurfing is about 31 miles an hour. And I'll let you guess what happens to a windsurfer if they're going 31 miles an hour downwind to the Bay and they hit a plastic bag. I know. That's recreational, which is one of the beneficial uses that's behind this. There's another beneficial use that I think is more important, but perhaps -- that is pretty graphic, this year at the State of the Estuary Conference there was a discussion of the plastic in the five jars in the ocean and the research that's being done on what impact that has ecologically. It's feminizing fish. If you're dealing with ecological impacts that are to the point where you're changing gender, you have things to be concerned about. So that's why we care. Now, I'm going to just say one thing about

how we got here and what I want to hear today. We heard loud and clear when this permit went through the first time, give us a chance to be innovative, give us a chance to develop programs that reflect our municipalities, our counties, our cultures, don't be prescriptive. And we said, okay, we'll let you try that. And I do believe that innovation and tailoring something to an individual geography is the right way to do it. But it does have to work. We've been underwhelmed at times with some of the results, so hopefully we will get a little better balanced indication today of some of the success stories, as well as some of the problems with us not being prescriptive. But in order for that to be persuasive, there has to be metrics that are realistic in terms of measurement of the cost and in terms of developing a persuasive evidence base. So that's really what we want to hear is what has been done innovatively, and how really it can be measured in a way that we can convince all the stakeholders that we're on the right track.

CHAIRMAN MULLER: Thank you. Other Board members? So I think we can continue on at this

point. We will go with Water Board staff for number 2 here?

MR. WOLFE: Right. I'd like Tom Mumley to make a presentation for the staff.

CHAIRMAN MULLER: And I believe you'll be giving an overview of the compliance strategy and annual report review. Correct, Tom?

DR. MUMLEY: Yes, that pretty much summarizes what I'm going to talk about. So just another recap of what the permit trash requirements are, not stating the monitoring and reporting-related aspects that Board member Young referred to, but basically the reduction-based performance, the drivers, and rather than saying 100 percent reduction, our goal is no adverse impact level, that's a little bit more tangible, if you will, but still tough. And then I'd call attention that there is a requirement for a mandatory minimum amount of full trash capture devices must be installed. They must be installed within areas equivalent to 30 percent of the mapped or a form of commercial land use area, so that was a frame of reference up to 30 percent. And I'm just going to site throughout, so my understanding is that pretty much has been

or will be achieved, which is good news. And then, in addition, if you will, as mitigation for the ongoing trash loads, there is a requirement for a mandatory minimum amount of hot spots must be cleaned up, so the number as it relates to size of community, at least annual, and so the challenge is how do we determine compliance with load reductions, in particular, at least for full trash capture -- the full trash capture component, it's fairly straightforward and actually we're going to have a presentation from Janet Cox from the Estuary Partnership demonstrating the results of the Full Trash Capture Demo Project, which gives an indication of how you can actually track that. But here's the challenge, we presented a form of this, if not this slide before this Board in past dialogue about challenges with monitoring trash, and the fundamentals of the challenge associated with trying to establish a baseline load level. These results reflect -- the green boxes and associated dots are Bay Area data, the blue boxes and associated dots are Los Angeles Area data, which part shows an equivalent level of variability and comparable levels, if you will. The message here

is the extreme degree of variability associated with observations of amount of trash generated in a spot. And so if one takes -- if you look at some of these -- like over here for retail, I mean, we see data ranging three plus orders of magnitude, that's an extreme amount of variability that has to get -- if you want to use these data in a smart way in terms of doing load predictions, we're going to have to recognize if we just used the means, those are pretty gross simplifications of what's actually going on. But the fact is, when you have this much variability to try to show change relative to a mean, we've got orders of magnitude of potential variability and we have a hard time distinguishing change from just noise. So our challenge is how do we improve upon this?

VICE CHAIR YOUNG: Let me ask you a question about this chart, please. This shows -- let's take the Industrial Bay Area, Greenpeace, that chart and each point represents the variability in time of one place? Or the variability among many different sites that fit this description?

DR. MUMLEY: The latter.

VICE CHAIR YOUNG: All right, that is extremely important because what we were asking in our permit was to track trash coming from a particular area, rather than assuming that a retail establishment in one city is going to generate the same amount of trash as a retail establishment in another city, and I think what this chart shows us is that, if we have a land use that you can have the same land use in a lot of different locations and have a different amount of trash generated. Is that correct? I'm wanting to make sure because it's important to our further discussion.

DR. MUMLEY: Yes.

VICE CHAIR YOUNG: Thank you.

DR. MUMLEY: So that actually leads to sort of the discussion that we've been having over the last year and a half after we responded to the initial proposed baseline loads and associated related short term plans, which were based on applying these type of data in a simple model predicting overall loads, and then extrapolating from that what the loads would be from a particular community, and that's where we run into the dilemma of the data don't really

support the applicability of the model in that context, whereas focusing in on areas where the trash is being generated is perhaps more amenable to measurement and tracking. And that's where the discussion that we've been having now is turning the ship in the direction of solving the problem by focusing efforts on the highest trash generating areas. That's where we should be able to take -- if you take significant actions, we should see measurable differences. That's the simple logic there and the performance measures that we have put on the table so far are simply, if you put in full trash capture, then you are actually illuminating trash loads from the areas that that full trash capture serves, so that's in and of itself a trackable performance measure, or recognizing that full trash capture devices won't work everywhere for various reasons, you know, sometimes it's just the design of the storm drain system and other logistical challenges. We've challenged the municipality to consider a combination of other controls that would achieve the same level of performance, the benchmark being full trash capture, essentially implement enough controls to show that you've knocked out

those high trash generating areas to lower, if not no trash generation. That's the simple sort of challenge that we're working with in terms of focusing attention and solving the problem by addressing controls where they should have the most benefit, the highest trash generating areas.

And this slide sort of outlines that strategy in four components, first we started with let's map our trash generation areas, and this is building off of the maps that were already generated relative to the previous load predictions, that we can start with land use in the relative understanding of trash loadings from the various land uses, and map our communities into high, medium, low areas. And starting with land use and other factors like demographics which have been shown to have a factor in what the levels of trash, but more importantly to ground proof those mapped generation areas with local knowledge and field verification, so that as you pointed out, Board member Young, just because it's a retail land use doesn't mean -- it may not have high trash generation for one reason or another in that community, so ground truth it where you have other areas where residential --

some residential areas are high trash generating for various reasons. So start with mapping where the relative levels of trash are generated in the community, and then take those and take the community and divide it into Trash Management Areas and the issue there, you know, manage areas that are manageable in terms of what we know and how we're going to focus action so there's a little bit of freedom in terms of how that delineation is done, in terms of magnitude and focus. And then, within those areas, implement new or enhanced actions, and this is where the performance of full trash capture, implement full trash capture in one of those management areas, and then we'd say check for discharge through the storm drain system, trash has been adequately abated there. Or, a combination of other actions within that generation area that reflect the understanding of where the trash is coming from, and what types of measures may be the most expected to abate it, and then ultimately just saying that is one thing, but more important to get into this bottom line, to actually verify -- assess the effectiveness and verify it, and there's a lot built into that last bar.

VICE CHAIR YOUNG: I was just going to ask a clarifying question. It's my impression that what's on this slide of being presented as our strategy was basically contained in the Board letter of March of this year that we sent to the Permittees?

DR. MUMLEY: Correct.

VICE CHAIR YOUNG: And we outlined the strategy at that time after reviewing annual reports that the cities had brought in. So this reflects our March -- or our instruction basically to the Permittees since this last March?

DR. MUMLEY: Yes. And you referred to our letter the previous year, June of 2012, which responded to the initial submittals by the various Permittees, and we said rather than belabor the shortcomings of what we found, let’s work on coming up with an approach that works. So we engaged in an ongoing dialogue, formed a work group of represented municipalities, and they worked with us in the development of the strategy. So basically last March we were in a position to then say, based on our discussions, this is what we expect you to do and start

demonstrating implementation of this starting with the forthcoming annual report as the initial indicator of that – you're making progress in that direction, and then, as I'll explain, ultimately the foundation of most everything you do from here on out such as the preparation of the Long Term Management Plan, and the demonstration in the short term of the 40 percent load reduction performance measure.

MR. MCGRATH: But, Tom, would it be fair to say that we're not completed with this work among all our municipalities?

DR. MUMLEY: Well, that's what I'm going to explain right now.

MR. MCGRATH: Okay.

DR. MUMLEY: So this is basically a status. But anyway, this is just an example of a community, which the color codes of the land uses – they've chosen actually to go one more, create an ultra-high, not just high, but ultra-high, so I think that's what the purple is, and another complication that is that there are some blue splotches on there, those are where there is existing full trash capture devices in play in the areas served by that. So that's one

reflection of how you can demonstrate performance is that you put in a full trash capture device and you can start showing the magnitude of area that's affected by it. If that was the only way to go, the goal, of course, would be to turn all our communities blue. But we don't really think we need to put blue full trash capture in our green zones, we want our communities to be as green as they can be, right?

And this is a little complicated, but it just shows how the community took that information and divided itself into a number of management areas that reflect a combination of factors: the drainage, you know, how the area drains, the degree of controllability of things within it, so larger ones mean that there is the same type of actions that can be taken broadly versus smaller ones reflect more focused type of action, and so this is an illustration of a community that really put a lot of attention to this, probably one of the more advanced, if not a more advanced, of what we are finding in some of the other early mappings. They're much coarser in terms of the mapping of the management areas, which opens the question is that a smart enough

delineation in order to identify the types of controls one would implement in an area and how would you track and verify and ultimately assess effectiveness. The bigger it is, the harder that's going to be, as you point out. The smaller it is, the more areas you have to attend to, but the more certainty you're going to have in terms of focusing actions and measuring success. So it's a balancing.

So this simply summarizes at this point what we see as the assessment options. First, actually, you know, it's going beyond just a plan to implement controls, but actually verify that those controls are being implemented and keep in mind, for full trash capture, that's the primary means of demonstrating performance, is verification where they are in the area service. Otherwise we get into the three options below that: some form of on-land observations, visual observations that can include use of photos or trash counts. And I think in terms of two scales, one actually being in one or more areas that are representative of what's going on in that management area where I can track to see how things change over time; or otherwise I may pick

locations that are specific to a particular source or activity of concern to see if the controls on that source or activity weigh. So this is sort of the idea that, in any given management area, I assert that one could pick locations that represent what's going on in terms of trash generation and movement and ultimately discharge as a way of verifying are we taking actions that are having an impact.

Alternatively, or in addition to, more likely, we also have experience with identification of hot spots through protocols that we developed in conjunction with municipalities of ground truth to do rapid trash assessments in streams. Those techniques can be used to show benefits. So, if indeed we are making progress on land, we ought to be able to observe the benefit in terms of visual observations, photo documentation, and trash counts in our waters, particularly focusing in on known hot spots, trash hot spots, or indicators near outfalls to be more reflective of what's coming from the storm drain, recognizing that a number of our hot spots are complicated by other factors like homeless encampments, in particular.

And the last point is the one that we're most challenged with, how it actually measures flux to or in water; 2 is the discharge to water, flux is actually what's in it and what gets out of it, so what gets into the creek, gets into the Bay, and our rapid trash assessment methods that reflect creek and shorelines don't account for what's in the water itself, so that's an added challenge. And all of these have some level of attention, but we've basically challenged the municipality to embrace a smart combination of these techniques in each of their management areas as a way of showing they're making progress.

This is just a quick example of one slide that shows how you can see a difference between a) clean, b) you see a little bit of trash, c) you're seeing more, d) you're seeing more. So you could have these curve indicator locations, perhaps. Each month when Board member Muller comes here, we'll see how many pieces of trash he counts walking around the building. Those kinds of techniques could work, especially if we can get some consistency in terms of how we make observations and record them, and then find ways

to use the masses, if you will, volunteers, the more the better in terms of the value of these types of measurements.

This is just a comment, unfortunately not too uncommon an observation that we see, all this trash building up, in this case often creeks, our part of the storm drains become creeks, and it's not uncommon to see this kind of mess. But obviously it would be a good place to track improvements. I would say in this case, well, I'm not going to editorialize on what I think is going on there.

This is – sorry – well, I just had another one. The other picture was just one of the in-stream methods that's being tested. We actually try to collect trash within a flowing stream to measure flux, pretty complicated but potentially some benefit. Although the concern is like what types of situations would that actually work, I mean, because a lot of our trash is getting into our systems through different means, so that's one technique that has value. We're going to have to put our heads together to find other techniques to measure load reductions.

So this is just a summary, a brief

summary of what we observed in this year's annual reports. As I said, we told the municipalities back last March, this is the strategy that we expect them to follow, and then we followed up with directions for expectations in this year's annual report, and start reporting progress to that end. So what we observed is, as far as the initial mapping of trash generation areas, it's essentially all done. As far as then the delineation of Trash Management Areas, everybody submitted maps, although I'll just caveat that with, now that we're looking at them, we think we may need to have some dialogue in terms of improving the delineation, what I was getting at is how well founded are these in terms of really reflecting how you'll manage trash because some of them are pretty big versus I showed you a case where they're a lot more detail in terms of thinking the basis of that, so some may need improvements as they think through how they're going to associate actions with their management areas.

And as far as documenting and starting to document that there have been significant new and enhanced actions in those highest Trash

Management Areas, it's a mixed bag. There are some good examples that we're starting to see already in the annual report, and others have said we're working on it. We didn't state that everybody was expected to have to make this switch in time to fully populate their maps in this annual report, so if they couldn't get it done, they needed to state a commitment to complete it, and I believe everybody at least gave us that commitment and we're now in the process of following up on that.

And as far as actually documenting, no existing or planned assessment message, most municipalities punted on this one as to "it's a work in progress." I'm not totally surprised, but there are few exceptions, though, where some communities are already demonstrating that they're thinking about how they feel they'll be able to assess the effectiveness of the significant actions that they intend to take in their Trash Management Areas.

So just finishing up, next step, and it kind of relates to following up on what I said just now, unfinished business in part gets reflected in the long term plans that are due in

February because we expect those long term plans to be based on this strategy, and so in order to show in the long term what they intend to do to ultimately meet the goals, they have to show what they are currently doing. So that is where we would see further delineation of the management areas, documentation of existing significant new enhanced methods, and then what they're going to do from here on out in terms of the long term, and then to just remind us all, the 40 percent load reduction performance goal is as of this June. And so basically that's the major checkpoint coming up in a lot of the theme today, how are we going to demonstrate that knowing that we don't have these quantitative measures worked out? And here I'm just reiterating our philosophy, is that this is essentially a culmination of factors that will be weighed for municipalities to demonstrate a best effort towards that, if not some degree of attainment of it. First of all, most everybody, if not everybody – I should say everybody has or will have met the full trash de minimum mandatory minimum full trash capture, some beyond, so that directly translates towards 40 percent reduction

because everywhere they put in full trash capture directly equates to reducing those loads to zero. So some communities, I think, are going to be able to show substantial improvements there. Otherwise, we're looking to see documentation of what significant new or enhanced measures have been implemented and particularly in the highest generation areas, and this will be the challenge. How can you predict the effectiveness of this? What types of on-land or in-water measurements, observations are you going to rely on in the short term to make your case that you have met the 40 percent or have made significant progress to get reasonable best attempts towards that.

CHAIRMAN MULLER: Thank you, Tom. Any other comments or questions of Tom? If not, we'll move on to our next presenter. And I don't have a card, but I don't know as to where the partnership is in the room. I didn't have a card. Mr. Cox, thank you. I'm keeping time. We're a little behind, but we'll catch up there.

MS. COX: Chairman Muller and Board members, I'm Janet Cox. I work for the San Francisco Estuary Partnership, and I'm glad to be here. I have been managing the Bay Area wide

Trash Capture Demonstration Project for the last four years. It is a $5 million project funded initially by Federal Stimulus money that we put together in order to help the municipalities comply with the MRP as they reduced trash. The construction deadline was in March of this year and we made the deadline and installed 4,003 devices all over the Bay Area, about 42 of those were the very large devices that I'll show you in a minute. And by the official end of the project, the end of this month, we will have spent every single dime in the grant.

We've had great support from our project partners, 61 of the Phase 1 Permittees signed up to join the project; four Phase 2 communities also participated. We've been working with 12 suppliers of a vast range of small and large trash capture devices. Water Board staff have been with us all along. They approved the devices that we offered through the program as full trash capture, and they've just been super helpful, and we've also been working with the BASMAA Trash Committee since the beginning of the project.

Just so you'll see what we're talking

about, trash capture devices come in all kinds of sizes and shapes for all sorts of conditions. This is a little media filter in a drop inlet in a parking lot. There are also things called connection pipe screens which essentially keep the trash in a catch basin while the water flows out through the outfall pipe, and these come in a number of different configurations, and there's a great variability in catch basins around the Bay Area.

Then there are very large devices. I think that this is the 73rd and International, this is a hydrodynamic separator being installed. You can see the bethel box behind it. These are very big construction projects and, as I said, I think we put in about 42 devices that were of this type.

So how did we do it? The Estuary Partnership, as you may know, is a program of ABAG. We contracted with the State Water Board's Division of Financial Assistance to obtain the funds. We then subcontracted with all of those vendors and all the municipalities, and in the course of contracting with us, the cities' and counties' scope of work committed them to the

long term maintenance of the devices we were going to purchase. We developed a bunch of project forms that essentially created a contractual arrangement, an agreement between the cities and the vendors, which gave the cities the power when it came to managing the devices they were going to be procuring. Municipal staff sited the devices and worked with the vendors to figure out what they were going to install where, and then at the end of the project, after installation, after the cities approved the devices, they signed off, the vendors signed off, I signed off, and the devices became the property of the municipalities.

So we also built a website. This is an interactive GIS-based website that shows all the locations of all the devices that we installed, and it's also possible for the cities to upload information about devices they purchase on their own. This is a screenshot from way up in the air of the devices that we installed. You can zoom in and see it on an even closer than this, this is downtown Walnut Creek and the devices that they've installed, the red -- I think the red icon show places where there's a cluster of

devices like at an intersection or something.

The website also has a dedicated page for each municipality's list of devices – don't try to read this, it's impossible, but all of the devices installed by the municipalities are seen on this, which is sort of like the dashboard for the City. If you zoom in, you've got information about what kind of device it is, who the manufacturer is, and then, when you get – I'm not going to show you and go through the fine print here, but when you get to the location of the device, the City has the ability to upload information about land use in that area about maintenance, you can put in as many maintenance events that you need to to show whether the thing is working, whether it's broken, whether it's full, and all of the information that a city uploads here is downloadable in a big CSV table that you can use for report generation and all kinds of things.

This was quite a project. I have a lot of sympathy with ObamaCare at the moment. It's been a fascinating project, and never boring for a single second. We had to overcome a bunch of challenges and I think we managed to overcome

them all. We allocated the funds based on formula that included both population and the trash capture requirement of the Water Board. We had -- it was amazingly difficult getting all the contracting done and I think we probably spent about a year and a half on it, and part of the problem was that the Division of Financial Assistance was used to sending out contracts to folks that were going to build wastewater treatment plants, but they really hadn't figured out how to contract for a little cheese grater that goes into a catch basin.

Everything took longer than we expected it to, the whole idea of shovel ready, I think, is a myth. We had some interesting vendor compliance issues, we had somebody who had a Davis Bacon wage issue that stopped us in our tracks for a while. We had another vendor vanish when the Board of Equalization figured out they hadn't paid sales taxes for a few years, all of this, it was just one interesting crisis after another, but we got through it.

The trash tracker was not fully functional toward the end of the project -- until the end of the project, which was frustrating.

The other thing that was frustrating was it never rained in 2013, so we don't have a huge amount of maintenance information from this year.

But we're still going. BASMAA has another Prop. 84 Stormwater Grant that is going to add a lot of really critical functionality to the tracker. We're going to add those trash generation rate areas that Tom referred to. We're going to be able to add another layer that includes trash hot spots and other key locations where cities need to be working on land. And I just think there's tremendous potential in this website. At the end of the Prop. 84 project, we will finally have a public interface that will actually turn the thing into a trash portal on the State Water Board's website that ought to be helpful for the trash amendments that State Board is working on. So that's my story. It's been a trip.

CHAIRMAN MULLER: Thank you. Questions?

MS. AJAMI: I was wondering, maybe you mentioned it and I missed it, but how did you select these locations, and if every community, depending on their income level and everything had an access to have one of these demonstrations

within their community?

MS. COX: Well, what happened was that we allocated the funds to the communities and the funding -- the amounts that the cities got went from $8,000 to almost $700,000 --

MS. AJAMI: Right, but then your allocations are based on like - did they write a proposal for their projects? Or did you just decide this community based on their needs get this much?

MS. COX: Well, we looked at population and we also looked at the number of hotspots that the Water Board had assigned in the MRP.

MS. AJAMI: Okay.

MS. COX: And so we tried a bunch of iterations of the allocation formula, and we hit that one and there were suddenly no more quibbling and we figured we had it. So each city knew from the moment of contracting how much money they were going to have. And they also could see, because the website also provided information on the devices we were offering, what the costs were, and we had all of the information, all of the specs, everything for all of the devices on the website, so then the cities

had to look at - you know, we trusted the cities to figure out where their trash issues were and I think that, as you'll see in the draft report I just handed out, I think they knew quite well where they were. So knowing their own community, they could then look at the list of devices and try to figure out what they thought was going to work where, but they did all the siting, we just provided the funds and answered the phone constantly.

CHAIRMAN MULLER: Thank you for your partnership. Any other questions or comments? All right, if not, we will move on -

MS. COX: Thanks very much.

CHAIRMAN MULLER: -- we'll move on to our environmental NGOs and I have Save the Bay, Steven Knight, for one, and number two will be the Clean Water Action -- I don't have a card -- Miriam Gordon, yeah, I think you're here. So we'll let you two step forward, please.

MR. KNIGHT: Chair Muller, members of the Board, thank you very much for the opportunity presented by this workshop to weigh in on this process. We really recognize this groundbreaking work on source reduction and trash reduction in

our stormwater systems has not been simple or easy. It was very helpful to hear Mr. McGrath providing both an on-the-ground, as it were, anecdote about experiencing trash in our lives, which all of us do, but also the big picture about the global negative impact, which this Board is on the cutting edge of dealing with because once that plastic is in the ocean, we're never going to get it out, so that's what we're doing is we're keeping it out, and so it's truly important and historic work.

And three years into this process, with many lessons learned and a significant effort invested, and signs of progress emerging as we've heard in the last half hour, our main recommendations at Save the Bay to this Board is stay with the original trash reduction timeline because when you're making progress, that's not the time to slow down, quite the opposite.

From our review of a range of annual reports, there are, I would say, three things that are evident, first, some cities are reporting a great deal of detail on several new trash reduction efforts, and they've included information on levels of implementation,

underscoring what Tom reported. Others have reported very little detail on both old and new efforts, making it difficult to tell how much if any progress they have made over the past three years. And third, it's both apparent and impressive, the level of effort that Permittees have put in mapping their trash generation areas, providing a good picture of what's actually going on out there in individual cities. And this information, which is long overdue, can provide a vital base on which to move forward in a way that both reflects and respects the local conditions in individual communities.

So although there's currently a lack of data to help gauge progress towards next year's 40 percent reduction requirement, there is one source of hard numbers that we recommend the Board request from all Permittees, the percentage of very high high and medium trash generation scenarios currently draining to full trash capture devices. The purpose of using this information is not to proscribe a higher level of full trash capture; instead, that information provides a jumping off point for determining the level of effort that should be dedicated by that

Permittee to other trash reduction actions. So a Permittee that is capturing five percent of its very high high medium trash generation scenarios should be expected to have very robust plans for on land cleanups, illegal dumping enforcement, source reduction, etc., as compared to a Permittee that is capturing 25 percent of those generation areas.

Because a one-size-fits-all approach would not be appropriate, a Permittee's suite of actions should focus on reducing or eliminating predominant sources of litter in their very high high and medium trash generation scenarios. This information will be reported in Permittee's long term plans, and some Permittees have also provided detailed sources for trash in their hot spot assessments. That information can also be used to determine what trash reduction actions should be implemented and to what effect - extent.

To gauge the effectiveness of various trash reduction actions, the Board should require the Permittees report changes in the amount and type of trash in their full trash capture devices ahead of July 1, 2014. As we've just heard,

there are 4,003 plus devices out there, and there's a lot of information and data that cities already had in knowing where to put those in the first place. Permittees that have had trash devices installed for a year or more should report changes in the data collected during maintenance activities and attempt to link those changes to upstream trash reduction efforts. I wasn't sure why or whether this assessment option information wasn't on the list from staff of how to determine what's happening because it's real information and the cities are collecting it.

The City of San Jose reported the effectiveness of their single use bag ordinance by serving both through trash capture devices in creeks. Other Permittees should replicate this effort. Transparency on trash data that is collected from public information and generated by a public regulatory process should be available to the public, and transparency is vital and critical importance in this whole effort.

Given that we're three years into this process, we urge the Board to adhere to the original trash reduction timeline. There are now

several examples of cities with robust programs that are addressing trash from diverse sources, and these examples can and should be replicated by July of next year. We know that Permittees under the TMDL in the LA River are on track to meet their goal deadline, and they had a shorter period of time to meet the zero trash goal.

So the bottom line is good news the Bay Area is engaged in groundbreaking work on source reduction and trash reduction in our stormwater systems because of the good work of this Board going back longer than three years, and our recommendation is to stay the course. Thank you very much.

CHAIRMAN MULLER: Thank you.

VICE CHAIR YOUNG: May I ask a follow-up? It's not really a question. I just want to make sure my notes say what you said. In terms of a logical framework for addressing this question of how we look at compliance with the 40 percent, what I understood you to say was that we have one statistic, or one data point, which is the percentage of the very high high medium trash generating areas that are draining to full trash capture devices. Your step two then I think is

where I couldn't scribble fast enough, but it was looking at the remainder of the level of effort, the remainder of the things that the cities are doing, they would have to do more if they have less trash capture and less if they have more trash capture, basically.

MR. KNIGHT: Exactly.

VICE CHAIR YOUNG: And then your third big point was to use the data that we have on hand, do some data mining out of the full trash capture devices and hot spot cleanups to see the effectiveness of source reduction, things that the cities might have done.

MR. KNIGHT: Source reduction or, if the cities can trace back some kind of documented reduction in data to another source of trash reduction, so I wouldn't limit it just to source reduction, if there's something else they're doing, then there's a lot of experimentation happening out there and we're all learning, and by focusing on collecting data and identifying success stories, and of course there's always the unsuccess (*sic*) stories, failures you might even say, then we can get better and tighten up so that we do get to no impacts in 2022.

VICE CHAIR YOUNG: Thank you. I appreciate that.

CHAIRMAN MULLER: Very good.

DR. MUMLEY: And in the transition, I just want to acknowledge the idea of mining data from the full trash capture devices was not an intentional omission, so it's clearly a viable option recognized and I appreciate that Steven raised that one.

MS. GORDON: Thank you for the opportunity to comment. I'm Miriam Gordon. I'm the California Director of Clean Water Action. And I want to say that my main comments today will be focused on the question of where to assess and how to assess, and then how do we get to what are the creative strategies that we're going to need to get beyond 40 percent to 70 percent and to full compliance. And I will answer that upfront by saying we're going to need a greater focus on source reduction, and so that will be the bulk of my comments. But I also want to say that I really appreciation the struggle that the board is going through and that the Permittees are going through to determine what is adequate assessment. And I think we're all

breaking new ground in the Bay Area on how to reduce trash and how to assess it, and it is a challenge. And I will say that, from what I'm seeing, the reporting from the Permittees so far, is that the assessment is currently based on reductions measured in storm drain devices.

And I would agree with Tom Mumley's presentation that we may need a variety of assessment strategies to fully characterize compliance and whether we're reaching our goals, so I would assert that measuring load reduction from storm drain full capture devices is not going to be sufficient in and of itself for a few reasons. First of all, these devices aren't fully effective, there's overflow from these devices, they're not always adequately maintained, and there are other ways that trash reaches the environment. Some examples are illegal dumping and windblown trash, so trash reaches the environment outside of the storm drain system. So we need to assess reductions in the environment, as well as assessing reductions in the storm drain system.

And we believe that Permittees should be required to show the same levels of reduction in

the environment, as they might have to show in the storm drains, and it should be assessed, two forms of assessment. Hot spot and flux measurements seem like a good direction, we haven't thought of anything better, so far. Other existing data like Coastal Cleanup Day and volunteer-driven data could be additive, but most of that data isn't designed to answer the questions that we're trying to answer. So I'm not sure that that's the best route to go. So I'm looking forward to the results of the Prop. 84 project.

Long term plans, however, to get us beyond 40 percent and beyond what full capture devices can render in terms of compliance are going to have to focus on source reduction. I mean, there's only so much that can be done with street sweeping, full capture devices, and public education. Not all trash can be reduced through these measures. For example, trash is blown off the streets prior to street sweeping and it gets into the environment that way. As I mentioned, full capture devices overflow when they get full, especially during storm events.

Public education is good as long as you

do it and you do it permanently and robustly, and that's not how public education on littering has been done historically, and it's not fully effective. And enforcement has its own challenges. Most enforcement authorities aren't willing to do a lot of litter enforcement, and it's only as effective as it is robust. So these are the typical measures that are being used to control trash, and they're not fully effective, so to get to full compliance, we're going to have to look at ways to not just control trash, but reduce how much is generated in the first place. It's irresponsible just to focus on controlling trash because it's extremely expensive, it requires a lot of taxpayer dollars, it's not fully effective, and it doesn't respond to the greater environmental problems that we've recognized about trash, that a lot of packaging and single-use disposable products require lots of planetary resources, and generate greenhouse gases and pollution, as was indicated when there was a comment about feminizing fish.

So what are we going to do to reduce this at the source? I think that the first thing is that we're going to need to start collecting data

that's going to help us identify sources better. We're going to have to characterize the products in the trash and understand where those products are coming from so we can design more creative solutions to get to those sources. And I've given you an example of how the current data collection falls short, looking at the characterization published in the SCCWRP fact sheet this year. The characterization of trash shows that, you know, they've picked out specific products that are already being regulated in some places, polystyrene foam food ware, bags, and beverage containers, well, these are already regulated, so it's good to have that data, but what about all the stuff that exists in other plastic and paper and miscellaneous? What are those products and how do we design enforcement and public education programs that get at those problem products, the way we have with the ones that are singled out in this chart -- the foam, the bags, and the beverage containers? By better characterizing those miscellaneous and other types of trash, we can also develop strategies to reduce them at the source. And that's where my organization has been focused, and we with other

partners in the Bay Area, the City of Oakland, San Jose, South San Francisco, Richmond, and the County of San Mateo, partnered with us on the study Taking Out The Trash in 2011 where we collected 11,000 plus pieces of trash and characterized each and every one of them by what type of product it is, how it's used, and what the likely source is. And so you can see that we have, I mean, that that is an example of a study that looked specifically at each and every product, that's the result what the products were, and then we looked at the sources. We characterized the products into types of products and we found that 67 percent of it was food and beverage packaging combined, with the exception of cigarette butts were very very prolific and couldn't be counted within this study, so they are also a major type of product. But you can see that, aside from cigarette butts, most of it is packaging. And we also looked at the point of sale, the known point of sale, we could tell from 19 percent of the litter that we collected, we could figure out where it came from. And by understanding what businesses are choosing to purchase these types of packaging, we know that

we can design -- local governments can design outreach programs for these businesses, as well as enforcement strategies. One example of an enforcement strategy would be promoting reusable products for beverage containers, or food containers. Just like the bag ban that results in reusable bags, we could charge fees on food containers or beverage containers that are disposable, and encourage people to bring reusable ones, and that's the area we're working on at Clean Water Action is designing creative strategies for food and beverage packaging because it's such a big component of our waste.

So just to conclude, what is source reduction? We've got to eliminate the creation of the waste in the first place, the generation. What are examples of source reduction? Bag bans are source reduction because they drive towards more reusable products. Local ordinances that promote reasonable containers would be source reduction. Voluntary reduction of disposable products by businesses, by food retail operations is source reduction. And we also have to get at the cigarette butt problem and smoker education could be source reduction.

So we have to start monitoring -- I would encourage the Board to be thinking about, and those who are involved in the Prop. 84 project, to be thinking about collecting better data wherever we're collecting data, let's not have charts like this that -- pie charts that show a lot of other and miscellaneous and unknown, because we can't design solutions for the miscellaneous and the unknown stuff, so we need in all of our assessment, we need better data on what products are in there. For source reduction, we can use litter studies, hot spot rapid trash assessment and trash characterization in the storm drains, this combination, and characterize products and their sources. A regional study would suffice; not every Permittee has to go about and design monitoring for source reduction. And I would encourage that the Permittees use this data to develop source reduction plans that help them get to the 70 percent and the 100 percent that we're going to need to get to in the future, and the Board should be requiring every Permittee to develop a source reduction plan and to target at least a 25 percent source reduction by the next milestone to

get to the 70 percent. That's the end of my comments.

CHAIRMAN MULLER: Thank you. Board member McGrath.

MS. GORDON: Sorry?

CHAIRMAN MULLER: A Board member has a question.

MR. MCGRATH: I do have a question. I mean, I found striking and compelling your analysis that showed nearly 70 percent of the litter is from food or drink packaging. And we have, I think, a classic tragedy of comments problem that the costs of the externality of the food and drink packaging aren't reflected in the product cost and they're passed to the cities, and the cities can't necessarily afford, or didn't set up the approval of the land uses that generate them in the first place with any kind of thought to what the economic costs were. So that's the problem. We don't, as water quality regulators have the authority to look for fiscal mechanisms, although I'm of a mind that going after the market forces could be equally effective. Have you guys begun, or any of the people that you work with, have you looked at

what kind of a fee structure may meet, first of all, a nexus test that reflects the costs so that you would stand up to any challenge as to what charge can reflect the actual externalities that are generated by the product, and how effective that might be because that may have to go on in legislative arenas and would need to be carried forward by pretty hard analysis. What's your thinking on this?

MS. GORDON: Yeah, well, we are, we're in the process of doing some background research on that with the City of San Francisco. We're looking specifically at the idea of fees on disposable coffee cups. Like the bag bans for the paper, almost all the bag bans have a fee on paper bags, and it's been demonstrated that fees also drive people to choose the reusable alternatives, so we think that that's an option. So if you have to pay for the disposable products, you're much more likely to bring the reusable product, or use a reusable product. So we're actually surveying different cafes in the City of San Francisco to look at the discounts that they offer and determine how much -- at what point does the discount change behavior. And

we're also looking at the other option of, instead of charging -- so like one kind of fee is the incentive, is a discount, the other is actually charging for the disposable product. So we're looking at both of those strategies to see which ones drive the greatest level of behavior change.

CHAIRMAN MULLER: Thank you.

MS. AJAMI: I just wanted to make that last comment that you made was pretty telling because I think people don't realize they're paying for their disposable cups, unless you take your own cup and ask them to fill it, then they charge you less.

MS. GORDON: Uh-huh.

MS. AJAMI: But then I'm going to the coffee shop, I'm not thinking about it because it's not necessarily like demonstrated to me that this is the cost, this is the amount that I'm paying for the cup. But when you go, I mean, even though it's a ten cent charge on the bag, people think about it, the charge. So I wonder what will be more effective, if they basically say, you know, this is the cost, if it's $3.75, then it's $3.65 or $3.75, or something like that.

That would definitely demonstrate that the amount is being paid for the cup.

MS. GORDON: We're also looking -- if any of you come to the Trash Summit being hosted by the City of San Jose on Friday, we'll be showcasing some of the creative strategies, and we're looking at also there are now services in other cities that allow people to pay into a system to get a reusable container that they pick up in a commercial district and drop off in a commercial district, and so what would people and businesses be willing to pay for that kind of a system to eliminate the disposable products? So that conversation is happening a lot right now. Thank you.

CHAIRMAN MULLER: Thank you. I can assure you the last 60 days I picked up garbage along Highway 101 every morning in front of our farm and 70 percent was fast food, McDonald's, Burger King, 7-Eleven, I'm not picking on them, but that's where the trash was coming from. And I didn't find any hundred dollar bills this year. Last year I found a hundred dollar bill picking up trash.

So we have a little area there for other

parties that would like to speak for a few minutes. I don't have a card, or do we have another party stepping up? I guess not. Yes, we have another party. I don't have a card, but we'll let you come – where's the party, other party? We'll give you a few minutes and then next will be Bay Area Stormwater Management District. Oh, sorry, he's with Baykeeper.

MR. WREN: Hi. I'm Ian Wren from San Francisco Baykeeper.

CHAIRMAN MULLER: Turn your mic up, please.

MR. WREN: Sorry. I did just come mostly to hear what's going on, the status of how Section 10 of the MRP is getting implemented, and I was really struck by Tom's presentation about, I guess, the points, the deficiencies associated with the most recent annual report. And it seems what he was kind of getting to is that cities are either unwilling or unable to come up with the proper assessment protocol, and that really kind of points to what is really needed, and maybe – and I'm really not sure why staff or the Board hasn't directed cities with a particular protocol. There have been several that have been

identified, most obviously is the Rapid Trash Assessment Protocol that was developed almost 10 years ago particularly for our region, and I know it doesn't get to particular issues like trash flux or source issues, but what we're really concerned about is how much trash is clogging the creeks along the Bay, and so if we can identify transects, it can go back year in and year out to kind of determine the status of what's going on here, it seems like it would be a very quick and cheap way to get about this, that could be conducted by City staff for volunteers, or environmental groups, for example.

And lastly, I just wanted to let you know I was down at a South Bay creek last week that is listed as critical habitat for Salmonids, and there were several 50-foot sections that are 100 percent choked with trash right now, and it's probably going to get worse as the storm season goes on, so this is an issue that is happening still and I haven't really seen a lot of progression to date, but I am confident that with all the brains in this room that we can get there, but I just -- I'm kind of worried that this is just getting way to complicated. Like

compared to other monitoring protocols that are going on, for example, tracking seal blubber and hydrodynamic modeling of nutrients around the Bay, this is literally child's play, and so why can't we get a simple monitoring protocol in place? That's it. Thanks.

CHAIRMAN MULLER: Thank you. And I believe representing - name and company, please.

MS. NEGRETE: Good afternoon. My name is Claudia and I'm here representing Steve Chiu, he is a Managing Partner of Pearl River Restaurant. Pearl River Restaurant has been around for over 37 years, has three locations, two full service, one take-out. It employs over 50 individuals who are full time or part time.

Polystyrene is so far the most effective material for temperature control, especially with Chinese food. Polystyrene is also most cost-effective material for a business like ours, that are labor intensive and ways of minimizing food cost is one of our primary goals. Instead of banning polystyrene, we would really hope that the Board consider implementing a recycling program. We believe that trash policy should consider reduction of all types of trash, not

just certain types for both food service and non-food as providers. Thank you.

CHAIRMAN MULLER: Thank you for presenting. I have no other others, yeah I guess that's proper grammar. So we will move on now to our industry friends. And I've been keeping a pretty good time here for all of us, and so we're doing about eight to 12 minutes for each one. So first we'll have Paul Singarella come forward, followed by Steve Stein. Or how do you want it, Paul? Perfect. Come on up. He's famous anyway, isn't he? He's on the news, he's everywhere, so come on up, Mr. Famous. Don't take it personal, we abuse everybody around here.

MR. STEIN: Well, it was 28 degrees in Maryland last night, so when I tell you I appreciate the invitation to be with you folks today, I really appreciate that.

CHAIRMAN MULLER: Sir, we'll have you stay with the mic, too, please.

MR. STEIN: Right. My name is Steve Stein, I am principal of Environmental Resources Planning, otherwise known as ER Planning because nobody wants to type out Environmental Resources.

CHAIRMAN MULLER: Can everyone hear him?

Okay.

MR. STEIN: Is that better?

CHAIRMAN MULLER: Information and we want to hear it, please.

MR. STEIN: I understand. My name I Steve Stein. I am principal of Environmental Resources Planning, also known as ER Planning. I do appreciate the invitation from Chairman Muller and the Board to share some of what we have learned conducting litter surveys throughout North America with a hope that some of this may be helpful to the Board and to the Permittees.

Our firm's roots go back 100 years when our family first began working in recycling and that work expanded into solid waste management litter back in the '80s. Field crews under our guidance have surveyed 21 million feet adjacent to roadways and on recreational areas such as beaches, parks, docks, and harbors, that's equivalent to a road starting in Bangor Maine, going all the way to Southern California. We have noted that, in addition to the obvious sources of litter, that there are a lot of unintentional sources, trash and recycling receptacles that are not maintained as required,

careless trash and recycling collection and setouts that are not in carts, or some of the less frequently addressed sources which impact stormwater trash. Also, it's easy for directives to be misunderstood. This particular photo and text is from page 82 of the San Francisco PUC Stormwater Design Guidelines. I know it says PUG somewhere in here and PUG would be my neighbor's puppy trying to get into this presentation, so…. But I know it's not the intention, but readers could easily infer from this photo and text that placing a trash container next to a stormwater drain could either be a best management practice or not a problem, but that's not true. Wilsey & Ham in a Stormwater Pollution Prevention Plan they produced for the City of Pacifica, specifically noted that garbage and recycling areas should be located away from drainage paths and waterways to ensure that debris and spills do not enter the system. So many times it is the little foxes that spoil all the vineyards.

I want to focus now, most of my presentation, on the questions, the good questions that the Water Board has posed. One, and I'm summarizing these, how can Permittees use

reproducible field measures of trash that are acceptable for compliance and monitoring? The most reproducible measure of trash has always been a tally or a count. In addition to a count, there are ways to measure volume more precisely than was originally done using a natural or bank density. These photos show the results of a test conducted by our field staff for this purpose, using a two gallon bucket, and measuring plastic bags, retail bags as an example. You'll see in figure 1 that measuring loose volume, only two bags would have been deemed as filling this bucket. The firm that conducted the first measure of trash for the BASMAA group told us that they use this type of method to determine trash volume. This dramatically overstates the portion of litter that would be attributable to these items. The second one shows that, by compacting these bags, you could get as many as 50 in the bucket, but you'd come up with the very opposite problem, you would understate the portion of litter attributable to these items. The third shows natural or bank density filling the bucket would be about 10 bags. Notice this is more intuitive and how it would yield a more

accurate measure that avoids the errors of precision and would reflect more accurately what's going on out in the real world.

For questions 2, what existing cleanup and monitoring data can be used to indicate trash reduction trends? For this kind of data to be useful, it would need to conform to statistically representative parameters in terms of factors such as the size of the area surveyed and proximity, we believe, to the stormwater system. There are factors such as average daily vehicle miles that every DOT in every state tracks, that would be a very useful factor when determining which sites to monitor. And because of time, I won't go into all these time constraints.

For question 3, how can annual reports, short term plans, and long term plans, be used to determine compliance? If short and long term plans only described actions that the Permittees intend to take or put in place, and that they do not include data, they would not be useful in measuring compliance. If, however, a revised methodology is put in place to measure trash more precisely and accurately, and that data would be included in the Permittee's annual reports, that

would provide an adequate measure of compliance. Using methods that are inaccurate can result in dead reckoning, navigational errors in determining your current position, and as you go forward and continue to measure, these errors are compounded and will take all of us to places that no one wants us to go.

What are elements of successful trash reduction programs? Because certain types of litter are unintentionally or carelessly created due to sources such as improperly secured pick-up trucks, improperly secured trash and recycling containers, and collection vehicles, no community has completely eradicated litter. Still, certain states and communities have implemented progressive litter abatement programs and litter that is reduced will not need to be captured. So places like Texas has linked their anti-litter program to tourism to maintain funding, as other areas have. Shelby County in Tennessee has set up an environmental court, one that is finally friendly to enforcement efforts that are so frustrating to Code and law enforcement officials in other areas. As President Lincoln once said, laws and ordinances without enforcement are just

good advice.

Cleanup levels are important, as well. A number of cities such as D.C. and the City of Toronto use litter vacs. Clean areas are always less likely to become littered. High profile campaigns with high profile spokespersons are always helpful; Texas has been real good about this, despite their high population, great number of roadways and such. Focusing on multi-family dwellings, residents tend to be more transient and may be less invested in the community. They're also more challenging to collect. Programs such as in Onondaga County, New York provide educational references and resources and enforcement when needed. And I know street sweeping has been a topic that the Board and the Permittees have all addressed to some extent. D.C. has used that to good effect, also using high profile litter receptacles tied to their Golden Triangle Business Improvement District to help reduce litter in the core of downtown.

For streamlining and reporting requirements, it seems that, given that the Board has identified significant inadequacies in some of the reports, that standardizing forms would be

very important, not subject to modification, one unit of measure, and that if there are additional points that need to be made, that they can be addressed as additional narrative, but that to make it easy for the Board to do what the Board needs to do.

There's an Edgar Allen Poe short story that just seems really applicable to the situation here about a fishing boat pulled into a deadly storm. Each crew member that seems panicked and without thinking the dilemma through and just jumping out at whatever seemed the right time and place, each drowned. Only one, the final member, the father, noticed that barrels somehow made their way out of the maelstrom and by watching what worked and grabbling on to that, he was able to get out of it successfully. The temptations will always be there to try and find some shortcut or easier way to try like credits were to get through this problem, but that would leave the area drowning in litter. The only way all of our communities can successfully navigate through the dilemmas of litter, trash, stormwater problems, is to identify and implement proven litter abatement elements and identify the

sources of this litter, and apply educational and enforcement resources.

To summarize, there's a better way to measure trash that will be more helpful to the process. If we're going to use cleanup events and there are parameters that can be useful for that, by doing that we'll avoid the problems of dead reckoning, implementing elements of successful programs is useful, and standardizing reporting will be helpful.

I believe the Board has a copy of broader responses to all these, but if you have any questions, I would be glad to respond and help with that. By the way, our firm did conduct the comprehensive survey of all types of bag litter in three cities, San Francisco, Oakland, and Washington, D.C., I was just reminded that that might be helpful to the Board. If you go to our website at ERPlanning.com, there's a full copy of that available and you can download it, so feel free to do that. And if there are any questions from that, of course, feel free to ask and I'll be glad to help in any way I can. If there are any questions, I'll be glad to -

VICE CHAIR YOUNG: I had a quick one. I

may have just missed something in what you said, you were talking about the methodology for assessing trash and you said counting it, counting pieces works, and then you switched to the natural density volume. Did I misunderstand what you said or -- I just want to make sure I got that clear. Either method, you think, works? Or both together are more descriptive? I think I missed something.

MR. STEIN: Right. Two different things. First, the tally, there's no replacement for counting, which is what we do in the field. Understanding that stormwater is more sensitive to volume, then in addition to that, that would be useful. There were questions about how the Permittees' consultant counted trash and in this case, if the tally had been conducted and those numbers had been reported, then it would be easy to see and to correlate these things. So you've got, well, how many bags did that end up being, for instance, that's an easy one. So it's like, well, it was three bags, it's like, whoa, really? But if it was like 100 bags, well, okay, that's very different. But without that, there's no basis to be able to sort of verify the data, so

it's a data verification tool, the tally.

VICE CHAIR YOUNG: Thank you, that helps.

CHAIRMAN MULLER: Very good. Thank you, sir, for taking your time to come out and give us this valuable information. Paul, and to be followed by Chandler.

MR. SINGARELLA: Good afternoon, Chair Muller, Vice Chair Young, other members of the Board. Mr. Wolfe and Mr. Mumley assisting me here, and thank you very much for that, I really appreciate it. Thanks, Tom.

So it's good to see you all, it's been a while since we had a workshop on trash reduction. I sense a real sea change here today. I believe at the last workshop much of that workshop was spent talking about whether the cities would get credits towards the 40 percent requirement, numerical credits for banning products, banning dart containers, product foam, banning plastic bags. And by the way, I don't even think I said my name, I'm Paul Singarella with Latham & Watkins, and I'm here today on behalf of Dart Container, as I have been in the past. So that seemed to be then -- the discussion today seems to be fundamentally different and we really

appreciate that. We've worked very hard on this issue. Mr. Wolfe and Mr. Mumley have heard us out, there's been submittals, there's been engagement, there's been a lot of work behind the scenes. Your staff has put a lot of effort into this and we appreciate being part of this process and being listened to. So why are we here today? We don't know what the cities are going to say, we suspect we do, and so we want to anticipate that. And we also would invite or request some discussion perhaps between the staff and Board on the second bullet of this first slide here, which is from the earlier staff report to the Permittees back in June 2012 on this issue of whether the cities were going to get numerical credit towards the 40 percent reduction requirement due next year. And at that point in time, staff thought, you know what? We think your credit requests, which were largely on the order of eight percent for enacting a ban on foam, those requests were within the reasonable range. I think what I'm hearing today is that the March 2013 statement by staff to the Permittees eclipsed what was said in June 2012 and March 2013, which did not say anything like

this is now the operative statement. It would be very comforting to us if we could get some clarification on that point.

Now, in terms of our other area of unease, we do see the cities continuing to connect the dots between bans on single-use foam food ware and their NPDES Permit obligations, their MRP permit obligations. And these next few slides are just examples of that, recent examples. El Cerrito is connecting a ban on foam to the MRP and its Clean Water Act obligations. Martinez is doing the same, these are very recent statements by these cities. Walnut Creek is doing the same. I won't ask you to go through these detailed quotes here today, but you'll have these materials. Alameda is doing the same. So there are a number of cities that seem to think that they're going to get credit towards the 40 percent reduction requirement of the permit through ordinances on products, including our product, foam, and that concerns us.

Obviously, we still oppose credits, numerical credits for bans. You'll be hearing from Dr. Mark Grey some of the technical detail, but there just has never been any connection

between a ban on foam, which is a land-based institutional control, if you will, and what happens in the water, trash reduction in the water, not foam reduction but trash reduction because there is a substitution effect and other materials show up in the water.

So if the cities are to present to you again today and ask you to continue to contemplate this, I think you've got the same question for them, and it's the right question, which is, where is the prove up? There was no prove up last year or the year before, these dots have not been connected. We've looked at the trash studies, Mark has, and actually the empirical information does not show any reduction of trash in the water from banning foam.

There's also, of course, the diversion of municipal resources away from other measures. When people get hung up, if you will, on these ordinances, they become very controversial. We're not seeing that so much in LA and, as you'll see, the LA region has many more – 10 times more full capture devices, interception devices, than we have up here right now -- not sure why, maybe they had a head start with the

TMDL down there, but maybe it's also because of a little bit of a side show on all these ordinances and bans and product focus.

The last bullet here is really interesting. In the LA River Watershed, they're already at 70 percent compliance, and that was as of two years ago. As of two years ago, they had over 40,000 capture devices installed - I misspoke -- only 17,200 are full capture. We heard today about the 4,003, that's great, we're glad to hear about 4,003, but have this broader perspective so that you can appreciate the work to be done and what happens sometimes when there are distractions.

We also think that there can be unintended consequences. The State of California has set very aggressive overall recycling rates for itself, 75 percent by the year 2020, you know, all in recycling of all types of what would otherwise be solid waste. Well, in California statewide right now, jurisdictions corresponding to about 20 percent of the California population have curbside recycling of foam. If you ban foam, what do you think happens to those curbside recycling programs? And is there going to be

some recycling program for the substitute products? You can't count on that. So this is -- someone earlier mentioned show me a success story? This is a success story, the curbside recycling of foam. The interception devices in LA, that's a success story. That's what we would like to see in the Bay Area, more curbside recycling of foam and more trash interception devices. You've heard us before -- I love representing Dart because these guys really are getting it done, have made the investment on on-the-ground curbside recycling, partnering with any city that will partner with them, they've also made the investment in scientific and technical expertise, having Dr. Grey here, and they've made the investment in having a good dialogue with the agency on these issues.

Just to give another sense of perspective on this, you may have heard about this, the District Attorneys around the State of California are also focused on trash. They've been focused on trash and the dumpster behind the retailer. And there have been major enforcement actions under the hazardous materials laws, not under the trash and water, but it's the same kind of stuff

that's showing up in the water. Now, these are just some of the examples here of what they have been after. They have collected on the order of $120 million from various retailers around the state in penalty actions. Don't know if you've heard about that because it's a little bit quiet, it's all focused on trash. The point is not to suggest that those companies should have paid these amazingly large fines, but the point is to say there's some uneven enforcement going on here when we see the trash still in the water, yet these retailers are paying millions and millions of dollars in penalties to the State of California for having trash in a dumpster that the District Attorneys say should have gone to a hazardous waste facility.

So in conclusion, we don't think the foam bans are a way of measuring trash reduction, that's what you wanted to talk about today, well, that's our message. You want to measure trash reduction, a foam ban doesn't get you anywhere near there, they don't reduce trash and they undermine recycling. Please bear that in mind because what you do, you don't want what you do to be running counter to other state goals and

goals of other agencies. I think that's a legitimate risk if you tacitly promote cities banning foam. We think the LA approach is an alternative that works and we think that you should send a clear message to cities that foam bans which do not reduce trash have no role to play in complying with the MRP. Thank you very much.

CHAIRMAN MULLER: Thanks, Paul. Go ahead, Board member.

MR. MCGRATH: I do have a couple questions. I mean, you're kind of a brave man coming representing the product manufacturer in front of this, and I salute you for that. Obviously, anything that we do as a Board has to be the nexus test, and it will. And it has to be reasonably related to the amount of trash, the permanence of the impact of the trash, and its ecological harm. And those you represent may not have much to do with the amount, you certainly have something to do with both the permanence and the ecological harm, and I wonder, we have as I mentioned earlier the classic problem of the commons where the cost of disposal in the commons is not reflecting the cost of the product. And

you do indicate some efforts at recycling, which are laudable, I don't know how much they're worth, but I was very impressed with the conversations that maybe where we should be going is in reduction, which is an alternative identified to recycling. So in terms of your clients, what are they doing in terms of reduction of the issues associated with the permanence of their source and with the ecological harm done with their source?

MR. SINGARELLA: Thank you for the question, Mr. McGrath, and thank you for the adjective, I'm glad you didn't use any other adjective, you know, "foolish" or anything like that - "brave" I'll take today and appreciate that. We would love to come back in a workshop forum or in any other forum and actually discuss the ecological, the global issue that you alluded to. I think it's very relevant, very important. One of the things you will find is that plastics in the ocean at this point in time, much of the scientific knowledge is about all plastics, you know, there really hasn't been the kind of information that we need to understand to the extent there is a problem out there in the North

Pacific Gyre, or anywhere else, what plastics are driving that. So that's one thing that is I think an important concept that has been important to us because we manufacture one particular type of plastic and it's this EPS, this foam. We've been very very taken by the work of Dr. Angel White up at Oregon State University, and she's been out to the North Pacific and presentation of this issue is actually quite fascinating, and if you want to hear from someone other than a lawyer, and I would think you would, we'd be glad to invite Dr. White to come in and present to this tribunal.

CHAIRMAN MULLER: Thank you. Just a quick question for myself as an incoming Mayor of a city, we're single-stream recycling now, and so you're saying another bin for polystyrenes? I think I'd get thrown out of town, I mean, we have enough bins on our sidewalks and streets. And I think the more bins we have, the more blow-out we're going to have from a windy stormy morning.

MR. SINGARELLA: Mr. Muller, it sounds like you had your city hat on here just for a second, so I'll talk to you as a City Councilman, and I appreciate the comment. And the last thing

we want is for you to be run out of town, we love Half Moon Bay, it's a great town, we know you're doing great work down there. What I would say is we've got recycling experts, and I actually can't answer that question because I used to be an Engineer, but I'm not today, but we can certainly be responsive to that question as to how it might look. It all gets tailored, you know, but those jurisdictions that have been interested have found it feasible and practical.

CHAIRMAN MULLER: Okay. Thank you, Paul. Chandler, thanks for your patience.

MR. HADRABA: You bet. Thank you.

VICE CHAIR YOUNG: If I can make just one statement, Mr. Chairman. Mr. Singarella, you posed a very good question about clarifying whether we would still consider a crediting scheme and, quoting from our earlier letter, I don't think we're going to hash out an answer for you right now, but I wanted to let you know that we heard the question, there are really two questions in there, one is what happened to the text of the June letter and the particular comment that you quoted, we can talk to that; and then, secondly, is there going to be some kind of

informal crediting that goes on as part of this weight of evidence approach that we are now forced to take? That's the second, I think, separate question. We will ultimately at some point, I promise you, circle back to that, probably not today, but thank you for the question.

MR. SINGARELLA: I appreciate that very much and you put it much more eloquently than did I.

CHAIRMAN MULLER: Thank you. And then after the next speaker, then we'll have Dr. Grey.

MR. HADRABA: Hi. I'm Chandler Hadraba. I'm a Board Member of the Western Plastics Association and I'm also a principal in Shopping Bag Solutions. And I'm here on behalf of my trade association. Dart is a member, as well as some other California bag manufacturers and producers. I really appreciate all the work you guys have done since a year ago of when I was here before you last, we've seen a lot of really good proposals and interesting ideas. But I just return back to a statement that was made to me by Mark Gold, head of Heal the Bay and Acting Chairperson of the Taskforce for the Environment

in Santa Monica: we're not trying to change people's behavior, it's linked to this bag, we're going to ban the bag and the problem will go away. My challenge to you is it's all about behavior. Unless you address the fundamental behavior of what's going on here, you're going to fail. Take the bag ban and the product bans that are being put forth for you today as touted as success; people have got addicted to free bags and having bags provided, and now the stores charge you ten cents for paper, Ralphs in LA is making a million bucks a month now, and the reusable bags, everyone probably still forgets, you get charged $.99 for. They cost a quarter, the store charges a dollar, they're coming from China. So now the stores have a tremendous financial opportunity to leverage the bag ban laws to maximize even more gain and still fail to address the fundamental problem of behavior. And for Dart, they're having the same problem, too, it's become a bogeyman product and, once again, you're going to ban this product, what's going to come next? What's going to replace it? Where is the creative solution to really help around? One of the things I'm working on with Shopping Bag

Solutions is we're tying coupon use with bag use, it's a bag where you can put your coupons in. People like coupons, people like to use them, you add the value to the product, problem solved. Until you're able to fundamentally adapt these behaviors, I really, you know, I don't know how you're going to get there.

And if you look at some of the other examples, too, what was in Brazil to make people stop speeding, or whatever, they hired a bunch of mimes and had them hang out on the street corner. I mean, I argue before you today before spending a lot of money on these surveys and all this other crap, you know, get some creative street artists, or put people out there and create a culture to where people stop and think. Changing customer behavior is the hardest thing to do, it's the reason why most businesses succeed or fail, and that will really determine what's going to happen with the goals you're trying to achieve.

CHAIRMAN MULLER: Thank you. Maybe you could stop by and visit Great Grandpa and Grandma because they sure as hell can't understand it. And where does the money go? You know what I

mean? Why do I have to give them $.10 for my bag? I don't even know where in hell it goes. That's what we hear, you know, "You're on the Water Board, Mr. Know-it-All." They're old anyway, so I can take it. Welcome.

DR. GREY: Good afternoon. My name is Mark Grey and I'm here on behalf of Dart Container Corporation and I'm grateful to be here and to contribute in the dialogue and the information. Just a couple quick introductory remarks. We're professionally, since the mid-'80s, an Environmental Science specializing in waste recycling and water quality protection. And I've had the fortune of working in the San Francisco Bay Area in the region since 1999, and in looking back helped countless cities reach their recycling goals, mostly with related organic waste recycling, and so, as I said, having the opportunity to contribute to the dialogue here and how we managed a difficult situation like litter generation, I'm grateful for that opportunity.

Dart asked me to apply my knowledge and skills to the question of whether or not polystyrene foam food ware bans have an effect on

litter generation and also to do some research, and some of that research and data, some others besides Paul have already alluded to today, of various cities' efforts to prevent and collect litter in urban streets and storm drains and in our receiving waters, including river shorelines and beaches, and also to examine some of the efficiencies and effectiveness of full capture devices, and I'll touch on that at the very end, I think there's a lot of discussion, you have many experts who are skilled in full capture.

This is really the thesis of what I'm going to talk about today in summary here in this slide. In looking at the data, it appears to me that bans on polystyrene foam food ware don't reduce litter in waterways. And I'm going to draw a couple of examples from the Bay Area to demonstrate that with a little bit of data in the time that I have. And what we'll see is rather, in one example specifically, that substitute products arise in the litter stream as a result of bans, or at least that's what the appearance is. And we would argue, or I would argue, that bans are not necessarily a measurement tool for litter generation, nor are they pure source

reduction. I think some here today would disagree with that, but I'll hold that it's not necessarily source reduction.

So the first example of that is the City of San Francisco, and I apologize to all San Franciscans for abbreviating their name "SFO," but it fits in the title nicely. So litter audits -- and this is probably the best dataset that I've seen, this is in-street litter audit data in San Francisco that they did in 2007 to 2009, and I'm going to show you a data table here, but I want to point out some of the conclusions to it, and then go through the data, and we can hit this again, that polystyrene foam food ware was actually a very small fraction of the litter stream, both before and after a ban was enacted, but yet this ban has been sited widely as a demonstration that we're doing something about litter in waterways, and I would just say that that's just not true. But when we look at the overall contribution of food service products outside of polystyrene foam food ware, we see that the amounts are actually increasing and the data will show that, and then that would lead one to conclude, me, that we see

substitution occurring.

So let's just take a few minutes and take a look at the status slide, which is an extraction of three pretty detailed reports that consultants working for the City of San Francisco did between 2007 and 2009, using identical methods each year, the number of sites increased each year, but really the methodological approach stayed consistent. And these are all count data and then percent of that total count.

And the first thing that I want to draw to your attention is that the ban appears to have had some effect, the ban went into effect after 2007 and 2008 for foam. If we look at all the polystyrene totals, the third row from the bottom, we do see that polystyrene foam food ware decreased in San Francisco streets. And this, too, as I said, was widely cited as a demonstration that we're reducing litter in urban streets, when really you've reduced foam a little bit, but it's still prevalent. I want to point out the slide, the all food service, not polystyrene totals, that are about on the sixth or seventh row down. And this is very important because in 2007, about three percent of all other

types of food ware, about three percent of that was found in litter, and that rose over the span of two years to about six percent. So that leads me generally to conclude that something is going on. Is it substitution? It appears like it's substitution to me because these are three years in time, limited datasets statistically, you know, these are certainly not normally distributed so you'd have to use non-parametric tests, but observationally just from the raw data itself, it would appear to me that, by banning foam, we've increased the incidence of all other types of litter that comes from so-called fast food or food service – cups, clamshells, and boxes, trays and plates. And that data at the top of the figure is a composite of a whole bunch of data from San Francisco. In fact, San Francisco did a really good job, they have more than 100 -- if memory serves me correct -- more than 100 different categories of the litter stream. And these, by the way, I failed to mention, this is for litter that's greater than four square inches, okay? So this is large litter in the City of San Francisco. There's also a small litter category that includes some

polystyrene foam categories, but I won't go through that today.

So next, a polystyrene foam food ware ban was enacted in Santa Cruz in 2007, enforced in 2008, and the data that we see from this, and I'll show you the figure here and I'll spend just a couple minutes on the figure, suggests that this ban really didn't have any effect at all on the incidence of litter in river, shorelines, or in the beaches. Now, some have pointed out already today, litter cleanups, while they're very effective, and I'm going to tout the effectiveness of them here in a few moments, they're very effective; however, methodologically, they're somewhat all over the map because you've got volunteers, different locations from year to year, so the methodological inconsistency is not as rigorous as, say, the San Francisco data from the industry Litter Audit.

All right, so this is litter mass and count recorded during annual litter cleanup events in Santa Cruz, and some annual precipitation, and I just need to set this up just really quickly so you can understand what

we're seeing here. Coming down from the top is precipitation each year measured in Santa Cruz, that's the top line. On the very right-hand Y axis, that's precipitation volume. On the far left-hand axis is trash collected per cleanup in pounds and the maroon and the light yellow bar correspond to that Axis, and that's beach and river cleanup in pounds. And then the middle bar is the count of polystyrene foam, not necessarily foam food ware, just foam, that was collected at beaches and that ranges from 12 pieces collected in 2007 down to just about I think I want to say about six pieces collected in 2011. So a few observations from this figure, 1) except for 2007, one could reasonably assume when you have wetter years, you have greater trash generation, which makes sense hydrologically and as we know how our storm drains operate, the wetter it is, probably the more trash you end up mobilizing into rivers than to beaches to shorelines. Number two, foam item count, again, this data has been widely cited in City staff reports as, oh, we've instituted a ban, look at this 50 percent reduction we got in foam -- in foam -- not in polystyrene foam food ware, just in foam, but it

went from 12 to six pieces, 12 to six over five years, that's not a lot of foam.

Number three, we can see that after that ban, say 2007-2008, if you look at that segment of the figure and the three elements to the right of that, we can see that really the ban didn't have any effect at all in litter generation. In fact, one could argue it looks like it's on the way up, especially for the river trash. So my take home here is, did the ban have an effect on litter generation? No, it did not.

So to sum up in the next couple minutes, and again, I appreciate the time today, we just don't think that bans are measurements, a ban just by itself isn't a measurement, and I've demonstrated a couple problems with that being a measurement tool; nor are they source reduction. So really, where do you go with that? A ban doesn't seem to be quantifiable, and it took me many many many many hours to look at these data and try and parse did a ban have an effect. And as others have pointed out today, and I know Chris Summer, the EOA, the Prop. 84 grant, there's a team of people working on the methodology to accurately quantify trash, where

it's coming from, where it's going, we need to do that, and especially the baseline data.

And we see cities like San Jose who have claimed a two percent rash reduction credit, yet haven't -- when I look at their data, I look at their annual reports, their available special studies, I don't see anything that shows, Mark, here is two percent of our litter stream, it's from trash.

So let me just conclude with a couple thoughts. Dart also had me take a look at full capture efficiency and full capture systems, and what's going on in Los Angeles. You have many experts, I've read work by Roger James, Bako Allen, a number of others who have done tremendous work on efficiency. But we see that some are very effective and I've listed them here, the swirl-type connector screens, CVS units, trash nets, linear units, there's the efficiency of catch basin inserts is somewhat a question, and they're being installed all over the place, but I know many of the experts feel that we could get a better performance through a host of management actions.

And it would seem in Los Angeles, in

surveying cities that I've done, I've talked to a number of city representatives in Los Angeles in doing this work for Dart, I've taken a look at a lot of reports, it seems in Los Angeles there's very aggressive implementation of full capture, it allows new and retrofit because we know that it just doesn't rain on new development, it rains on new development and existing development, and we need tools that capture that. They do require O&M; when you look at all the experts, the engineering experts, and the vendor experts, these have to be operated and maintained efficiently and, as I pointed out, certain types of BMPs are more effective than others, and I've listed them there.

And finally, clearly there is other effective trash reduction measures that exist, and in the work that I've done, and including San Jose, aggressive litter cleanup programs, street and storm drain cleanups, hot spot cleanups, river and shoreline cleanups, when you look at the data that you see from these reports, there's pounds of litter being picked up, there's cubic yards, there's gallons, so there's quantifiable amounts of litter being collected. Those to me

are measurable and quantifiable, and others have pointed out that we need some rigor in those methodologies.

So in conclusion, we don't think that polystyrene -- I do not believe that polystyrene foam from the data that I've seen in California, that polystyrene foam food bans do not result in a reduction in litter in streets or in receiving waters. And research indicates that bans are not a method to demonstrate or measure litter reduction. And it would appear to me that we're on a trajectory in the Los Angeles Area with the implementation of full capture and other programmatic measures, such as litter cleanups, to get where we need to be with litter reduction. And I couldn't agree more with the gentleman who spoke before me, that this is absolutely a behavioral -- you have to tie behavior to this if you're going to take this issue seriously. Thank you very much and I would appreciate any questions.

CHAIRMAN MULLER: Yes.

MS. AJAMI: Okay, a couple points, 1) if the market is very small -- can you hear me?

DR. GREY: Yeah, I didn't hear the first

word, market?

MS. AJAMI: So if the market is very small for the styro foams, why do we care? Right? Obviously, it's a big issue, you don't want bans happen because there's a business model that sells these products to the food industry to put everything in and sell it to the people. The problem is we look at waterways, but this is an interim problem, it's not necessarily ends where the waterways leave from our authority. The problem is that product, if it stays in the environment, has other impacts, as well. You mentioned about cleanups are more important to be focused on, rather than banning, that's another extra cost on society to cleanup. I totally agree with you, I think there should be -- and the gentleman before you who mentioned that there should be a big campaign on behavior change, every effort should have a big campaign attached to it to educate people why are we doing this, where do we want to go, and sort of build a partnership with public to be more sort of -- to be more involved in helping us to get where we want to get, however, I don't believe - I guess it's very hard for me to understand, if we can

try to get a product out of a system, if the product is hazardous to the environment as a whole, why should we just focus on letting it to be part of the environment, and then we spend money to clean it up, rather than saying, "Okay, let's just not even have it. What's the point?" So I guess, you know, I understand what you're saying, the data, and what's going on and everything, but I have a feeling that there's a big emphasis on cleanup, very limited emphasis on ban, but I think they're all part of the solution. We can't say one is not important, the other one is more important than banning. I think banning, you know, again, this is a long term plan, maybe in San Francisco it didn't matter because the market was smaller, maybe other areas that have a bigger market for this product would be more effective or have a different result, but just by saying banning is not a good idea because we can invest more money or more effort in cleaning them up and letting them not to get into a storm -- you know, waterways, that to me seems like a little bit of a -- not a very logical solution. I think it's important for us to invest in cleanup because we

can never get them out of the environment totally, but you can't say banning, we should not think about it because it's not a solution at all. I think you said it's a big bag of solutions that we need to look at and see how they work. Measuring? I mean, it's a complicated issue, you need to figure out how to measure and figure out how it impacts our environment, but, you know, just an observation.

DR. GREY: And gratefully accepted. Thank you very much. I appreciate it.

CHAIRMAN MULLER: Okay, moving on. I'm not going to open a gate in the corral, but if Board members need a quick break…. Chris from BASMAA, we have seven cards here and it looks like a lot of them are municipalities also, which is great. So try to give it a little condensed down version of what you all are thinking, that way you all have a fair chance of the presentation. But I don't think we need to repeat a lot of the things that we are hearing already. So let's offer us something new if you can along the way. So, Chris, you're going to start off?

MR. SUMMERS: No pressure, something new.

CHAIRMAN MULLER: Well, I'm trying to figure with seven cards, if I give everybody that 12 minutes –

MR. SUMMERS: Yeah, so their presentations, we give them like six to seven minutes a piece, Chairman Muller. So I think we'll try to get out of here by 4:00 if at all possible, I think we'd like that.

So my name is Chris Summers.

CHAIRMAN MULLER: Wait, Vice Chair?

VICE CHAIR YOUNG: Give us just a minute.

MR. SUMMERS: Yeah, sure.

CHAIRMAN MULLER: The Chair and Vice Chair are making decisions here for all of us, that's why we're in these important positions for $100.00 a day --

MR. MCGRATH: And worth every penny.

CHAIRMAN MULLER: And we left home at 4:30 this morning to do it, too, so we can handle it. So go ahead, Chris.

MR. SUMMERS: Okay, good afternoon. My name is Chris Summers, I work for EOA and for the last decade I've been -- I guess had the honor of being the Monitoring and Assessment Coordinator for the Santa Clara Valley Runoff Pollution

Prevention Program. And I've represented the Bay Area Management Agencies, the Stormwater Management Agencies Association, or BASMAA, as known, on the Regional Monitoring Program, which SFEI manages, the Technical Review Committee for about the last decade, as well. I've also had the pleasure of serving as the Chair of the BASMAA Trash Committee for about the last four years, as a result of the MRP requirements that came out.

So I'd like to share today our collective work and knowledge that we've gained to date on trash monitoring and assessment and provide you a summary of the next steps regarding the development of trash monitoring methods and the implementation of trash monitoring assessment programs throughout the Bay Area. In the short time I have today, I'd like to briefly discuss the following and just kind of refer back to Tom's presentation on our current knowledge of trash generation in the Bay Area. I'll also talk about what we've learned through literature, views on monitoring methods, and previously used to demonstrate trash reduction.

ID, Information and Data Gaps have

somewhat been talked about today, but I want to make sure we're kind of all clear on the high priority issues, as well as the monitoring assessment that's planned in the Bay Area, that's coming up. My presentation will be followed by six City staff that represent a number of Permittees within the Bay Area; we decided not to have 76 here of our Permittees, so these six have volunteered to come and talk about their experiences.

So just to come back to kind of a very general conceptual model and a bit of background is that we generally have three pathways by which trash can be transported to urban creeks. Understanding the magnitude of each pathway and its contribution to trash problems is ideal; however, just like any pollutant, whether PCBs, or Mercury, teasing out the relative contributions by any one of these pathways is challenging, it's not a straight forward process. A lot of assumptions have to go into our estimates, as other TMDLs have experienced and Water Board staff experience when they develop these TMDLs.

In collaboration with Water Board staff,

as Tom talked about, was to document the magnitude and extent of trash in receiving waters. And on the onset of the trash reduction requirements in the MRP, we narrowed our focus to evaluate the contribution from this one pathway, stormwater conveyances; while in parallel, enhancing our efforts to annually remove and enhance and assess trash in over 340 creek and shoreline hot spots in the Bay Area, that's what's required of the MRP right now, there's 340 hot spots in local creeks and shorelines, which annually -- that trash gets removed and gets estimated as to the volume of that trash, in some level of characterization, as well.

So this effort led to the Regional Trash Generation Rates Project which is now complete, and by quantifying and characterizing trash and stormwater conveyance systems, BASMAA was able to model trash generation from different land use types. Income was also a factor that inversely correlated with trash generation. Trash generation maps were created for each Permittee using this information. Permittees then conducted field assessments to confirm or refine the maps, which they spent a lot of time over the

last six months after we kind of came up with this strategy of developing of the maps and refining and confirming of the maps, a lot of field time actually going out and trying to confirm whether trash generation rates in certain areas were high or low or moderate.

Through that effort, we developed a draft on land assessment, a visual assessment protocol that was used by MRP Permittees, and was based off a number of existing protocols such as the Keep America Beautiful Index, and it was confirmed by using existing knowledge of trash generation within Bay Area Cities and Counties. This resulted in Final Trash Generation Maps which will be included in the Permittees' Long Term Reduction Plans, which are due as Tom said earlier, February 1st of next year.

So for the entire Bay Area, this is what the map looks like. We categorized it into four different categories and, as you can see, where you have urban centers, where you have commercial areas, those are the areas that are in the high and very high categories. The vast majority of the Bay Area, because of its rural nature and large expansive open space, say the East Bay

Hills and the East Bay Regional Park Districts, for example, are considered low trash generation, as well as moderate and high income residential areas, as well.

So this really helps cities start as a baseline of where to implement and focus their trash reduction actions. San Francisco and Berkeley, I guess they got cut off of this map, I inadvertently – San Francisco is not part of the MRP, they have a combined system. And the North Bay, as well, is a phase 2 community, which is not part of the MRP.

CHAIRMAN MULLER: Yeah, and since we're very sensitive to our neighborhoods, excuse me, I see –

MR. SUMMERS: I'm going to zoom in to --

CHAIRMAN MULLER: Is that the landfill?

MR. SUMMERS: Which one?

CHAIRMAN MULLER: The red hot spot on Highway 92 in San Mateo County, west side?

MR. SUMMERS: It's probably not a landfill, it's probably a commercial area that's through there I think, maybe.

CHAIRMAN MULLER: Interesting.

MR. SUMMERS: Every city has their own

map, so it will be included in the long term plans. So, John, if you're really interested in zooming in to Half Moon Bay and figuring out kind of what's going on there –

CHAIRMAN MULLER: I'm trying to be your number seven in our six.

MR. SUMMERS: Hopefully it's not the fence line outside of 92 there. So from a percent of urbanized area acreage, this is what we have, and so from a pollutant reduction standpoint, this is somewhat good news, you always want to see focusing in on smaller and smaller areas that seem to be a larger and larger portion of the problem. But we do have roughly 64 percent of the urbanized area that seems to be falling within these low areas. And then the focus then becomes on this other 36 percent, which is the moderate, high, and very high trash generating areas.

So collectively -- I kind of switched to Monitoring and Assessment real quick -- collectively really I see our monitoring goals as kind of two-fold, one is to observe reductions in trash, transport it through municipal storm water conveyances, and that's really the focus of

the MRP.

But we also acknowledge, and I think every city acknowledges, that really the goal here is to try to continue to reduce trash within the receiving waters, themselves and the issues that are there. So how do we evaluate whether those reductions from stormwater conveyances are also having an effect on the trash conditions in local creeks and rivers? In that first slide I showed where you have other types of pathways that are impacting those creeks complicate our ability to detect change within creeks, and if we're focused on only one of the pathways, which is what the MRP is really focused on.

So monitoring points and approaches will vary based on a number of factors, including the desire to link a monitoring result to an action or combination of actions, technical feasibility, cost, and the level of accuracy and precision that we need to have to have confidence when we observe a change that is actually real, that it's not just something that is temporary, that has actually occurred there over time and is sustained. This makes it challenging when we look in specific areas that have high levels of

variability and unaccounted for variability over time at the same site, as you said, Dr. Young, earlier. So that makes it challenging in certain areas.

I'd like to focus on these two middle ones, which is on land roadways and the stormwater system and monitoring associated with those. Back in 2010, BASMAA did a pretty thorough literature review of all the assessment methods as a step towards developing or unloading estimates. And these are just a few of the programs that are in place, trash monitoring assessment programs, and some of them are qualitative visual assessments, some of them are quantitative, very quantitative in their methods. It's important to note, though, that nearly all of these monitoring programs were developed really to assess condition and not to assess trends over time, which trends monitoring programs -- and again, regardless of the pollutant -- are really challenging to implement. They require a different approach that has to account for inherent spatial and temporal variability of the pollutant and the transport process. Most of these methods that have been

demonstrated in the past are not doing that, they are not trends monitoring programs over time. And so when we start to think about trends and how we assess and how we develop monitoring programs, the variability of the spatial and temporal needs to be taken into account.

Summing up the lessons learned to date for those two different measuring points, from the literature review we conduct, is really each monitoring method has its varying levels of accuracy precision, linkage to stormwater, feasibility and cost. And our goal is to develop a monitoring assessment approach that balances precision and cost while providing confidence that observed trends are really true and accurate.

So to do this, we have to consider the types of -- whether we like it or not, we have to consider the types of actions that are actually being implemented and the confidence we have in their effectiveness. And so, as we said before, with regard to the areas that are treated by full capture devices, focused studies conducted in the Los Angeles Region have shown that if devices are installed and maintained effectively, there's a

high level of confidence that one can have in their effectiveness; therefore, the approach that verifies that the devices are being implemented and maintained effectively is an optimal approach. And this is basically what LA is doing.

For other types of actions, information on effectiveness tends to be less robust, and at times specific to an implementation of the action at a specific site, and therefore the optimal approach is either to develop robust information about the specific control measure through focused studies, similar to what was done with full capture devices in Los Angeles, or implement a monitoring and assessment method that can detect improvements in trash conditions in the environment as a result of those actions. If focused studies for a specific action can show performance that is equivalent to the performance of a full capture device, then the confidence to the action is achieved and those types of actions may also take a verification approach. And so you can move -- you'll see in a second the Prop. 84 discussion is, if we can have enough confidence that certain types of actions as

designed or set performance standards, in essence, for those actions, then we can take more of a verification approach, similar to what we're doing for full capture. And then rely on other types of standardized methods, which I totally agree is that standardized methods do need to be formed over time and with good scientific input.

So to the information gaps, it really comes down to two things, is what is the optimal approach to assess trends in trash associated with stormwater and then our actions that we can demonstrate through focus studies that have an equivalent effectiveness of full capture devices. So the first is a methods development side, the second is BMP effectiveness studies, and how do we compare that to full capture and see if they test up to what full capture devices are actually -- the effectiveness of those devices.

So we're very happy that the State Board awarded BASMAA a $1 million Proposition 84 grant, and they recognized the need for more standardized monitoring methods and information on trash control measure effectiveness and cost. And this is a three-year grant that has statewide applicability, if not nationwide applicability,

and a number of partners, including SFEP and other nonprofit organizations such as the 5 Gyres Institute.

This grant is just getting started, we're in the early stages of implementation and we are developing a Technical Advisory Committee that will have a diverse group of scientists, regulators, trash monitoring, and BMP effectiveness experts to provide input on the monitoring and study design. So we're excited this is beginning and we actually waited for about a year for a contract from the State Board, and we hoped it actually had started a year ago, but through contracting issues, we had a year delay on this.

So these are two of the three tasks included in the grant, the third is led by SFEP and will focus on the My Water Quality portal for trash on the State Board's website, and expanding the utility of the Bay Area Trash Tracker, which Janet Cox talked about earlier. In parallel and in collaboration with the grant, and I want to make this clear to the Board members, is in parallel and in collaboration with the grant, Permittees also are planning to implement pilot

assessment and monitoring strategies, which will be outlined in their long term plans due to the Water Board February 1st of next year. So there is a section in those long term plans that talks about assessment strategies at a pilot scale moving forward.

So just in summary, you know, Bay Area Permittees have been actively involved in monitoring and assessing trash for over a decade now. Stormwater programs collaborated with SWAMP staff in the early 2000's and continue these efforts through trash generation studies that have significantly assisted Permittees in identifying areas with trash problems and setting a baseline for which progress can now be determined. That said, there remains a need for standardized cost-effective monitoring methods that can detect trends with confidence. Given the variability and cost associated with trash monitoring, the optimal monitoring approach will need to provide a balance between precision and limited resources.

With the implementation of California's trash project and the Pilot Trash Progress Assessment Strategies that will be included in

the Permittees' Long Term Trash Reduction Plans, we believe with confidence that we'll be able to observe where the trash problems associated with municipal stormwater are being solved over time. So I can take questions now and afterwards we'll --

VICE CHAIR YOUNG: Mr. Chairman, I - well, I'm torn and I need direction from the Chairman. I have a number of questions that your presentation has raised and there are some things that trouble me greatly. But I also don't want your colleagues from the Cities to have sat through this whole thing and not have a chance to present. So I'm wondering if what we should do is to allow the other presenters to present, call the time at 4:00 like we said, and then continue the whole procedure, the whole workshop like we had actually intended to do during December. I mean, I want to be fair to everyone, but at some point I think we need -

CHAIRMAN MULLER: We need to take it up with Chris.

VICE CHAIR YOUNG: -- well, we need to clarify some things.

CHAIRMAN MULLER: I think that's a fair

idea because we're going to run past 4:00 anyway, so let's give our Cities an opportunity to come forward now and then, as I said, this is not the final day, we are going to continue to hear this out in December. And so we will move on.

VICE CHAIR YOUNG: And thank you for waiting and –

MR. SUMMER: Trash has become my life, so, you know, every day it's up for a discussion.

VICE CHAIR YOUNG: I know how it feels to be last on the agenda and, so, thank you for all your patience.

CHAIRMAN MULLER: And so we will move down the Peninsula to Sunnyvale, please.

MS. TOVAR: Good afternoon. Melody Tovar with the City of Sunnyvale. I'm our Regulatory Programs Division Manager. And thank you so much for the opportunity to share a little insight into how we're approaching trash management action in Sunnyvale and an idea that we're pursuing on assessment.

So the City of Sunnyvale has that orchards industry history that is shared by so many communities here in the valley. We are a population of 145,000, so we're sort of a mid-

sized city, an area of 15,000 acres. Our storm drainage system consists of 3,500 storm drain inlets with about 80 outfalls to our local channels. We have two small pump stations.

So on the right is our Trash Management Area map. You saw a little preview of this earlier when Tom did his presentation. We did go through our entire city -- and the colors look different -- okay, so the trash management map, when you break it down has about 55 percent in the low or green areas, so not so different from the Bay Area-wide look that Chris gave us earlier, about two percent in the very high, eight percent in the high, and 35 percent in the medium. So again, in the low area of 55 percent, a total of 45 percent in that medium-high and very high.

Looking more closely to the north and kind of to the northeast, we have these large business park areas, home to so many Silicon Valley employers, and light industrial areas that are all aggregated in a big swath area, so we have those that are dominating the yellow to the north, we have a lot of islands, part of why our map looks so detailed is because we found that

especially south of that red area which is El Camino, we have a lot of individual areas that were coming up as yellow, but they're single uses like a park, or a school, or a single medium density multi-family area. So we planned to approach those differently than we would larger areas where we have the same kind of land use altogether.

Back to what I call my ribbon of red going down El Camino. El Camino Real stretches through a number of cities here in the Bay, and it is largely dense retail, and certainly through Sunnyvale, our swath is almost exclusively dense retail throughout all of El Camino. That stretch altogether is about two and a half to three miles.

So we're zeroing for today's conversation on that ribbon of red, our Trash Management Areas 1A and 2A and 2B. Those Trash Management Areas comprise our El Camino stretch going through Sunnyvale.

We had the opportunity to fund a large full trash capture device which is currently in design, and it is going to cover Trash Management Area 1A, that block in the middle. It is in

design, it's fully funded, and it will go through construction next summer. With all of these opportunities for large devices, it's never easy, our challenge on this one is that we wanted to get as close to the outfall as possible to capture as much area as possible, and in this case to do so we end up in our Water District's right of way, so we're working with them on what encroachment into their right of way looks like and long term agreements on being able to keep a device there for maintenance access, etc.

A short word on full capture for us in general. We have used both a combination of the large devices and the small devices and done a cost analysis on the 20-year costs, including maintenance and capital cost. And in general, the smaller devices look like they're about twice as expensive over the 20 years if you're covering the full area using either of those two methods.

My maintenance staff would not be pleased if I didn't share with you that they really don't like the small devices, that's a lot of work to go and maintain those and make sure that they don't accidentally disturb or break them during flood response. They greatly appreciate the idea

and the reality of those large devices where they can go to one place and suck it up. The capital cost difference is tremendous, it's on the order of magnitude, two orders of magnitude between the capital investments needed to do these large devices versus smaller ones.

So looking at our large investment area, 1A, it's 300 acres, you can see that it has a lot of green in it, too, so whenever you're doing a large device, part of the challenge is you're capturing a lot of lightly littered area at the same time that you're trying to get your densely littered area. Of all of the catchments in Sunnyvale, we have about 80, full drainage catchments, this was the one that ranked number one or two on the bang for buck, so how can we capture the most trash generation in a single catchment per dollar it would cost in order to accomplish full capture.

Well, this gives us a really cool opportunity because I mentioned that El Camino coming through Sunnyvale is all red for us, and it's a two and a half mile strip. The area coming through that catchment area is about three quarters of a mile or less. So I've still got

the rest of El Camino to deal with and one of our challenges is, if we did that using large full capture, it gets even more expensive than this one. So we would like to understand what other solutions would be equivalent or comparable to full capture. And since we have this one area with almost nothing but the retail in it and lightly littered, we really can use this as a pilot play land. Once we have the full capture device in place, we can test other things in the same area and use that capture device as a monitoring device. So looking closely at this area, again, we'll have full capture. We have already implemented a bring your own bag ordinance in Sunnyvale, citywide beginning 2012, our Council has approved a ban on expended polystyrene to take effect Earth Day 2014; that prohibition is then expected by ordinance to expand to all retail, so not just restaurants for expanded polystyrene foam food ware, but also the retail sale of that same material a year later. So we're looking at those source control actions as being additionally supportive of overall reduction in the area. It also helps us address the kinds of materials that we find most

problematic when we do litter cleanup and the kinds of materials that we find most commonly don't come through our storm source system exclusively, they also blow directly and by direct deposit, so we've already done those in that area.

So once we've got the large device in place, we can focus our limited resources on action in other places on El Camino, but we're not sure we're going to have the same level of resources to do full capture. So our interest is in testing what other kinds of suites of BMPs, maybe not a single best management practice other than full capture would get you there, but maybe a combination of best management practices would. And so the three that we're looking at testing some complement of are enhanced business engagement and enforcement -- again, it's all retail along El Camino, and it's very diverse, here we show restaurants, there's a Safeway, a 24-hour Fitness, a Toys-R-Us, -- so getting them to do the right thing and helping them understand what the right thing is is one of the strategies we would like to test in complement with either enhanced street sweeping; we currently do every

other week in Sunnyvale, everywhere, and so this would take us to probably weekly in order to test to see what difference that made. And then lastly, maybe the most difficult to implement at a pilot scale is the partial capture. The challenge there is that making an investment in temporary infrastructure changes is harder to justify with City resources, but we are still interested in trying to do some partial capture and, again, testing the effectiveness of that measure in complement with something else.

And so from our view, we've got this opportunity to use this one area where we're already going to make a $350,000 to $400,000 investment in full capture, and then further test whether other BMPs that might be comparable pan out to be so and also pan out to be less expensive per acre of treatment.

Our next steps with this are to assemble the resources to get it done. We were part of a set of BASMAA communities who applied for an EPA grant on testing out other BMPs and demonstrating their effectiveness, and we were not awarded that one. But we are looking forward to the Tracking California's Trash Grant as an opportunity to

leverage for assessment methodologies and for characterization of material as we move forward. And then we're also looking at reprioritizing our existing resources. Right now we sweep every other week, everywhere, maybe in lightly littered areas during the pilot time we don't do that, we focus on continuing that frequency in the higher littered areas and redirect some resources to do this pilot here along El Camino, and the same with our inspections, we look carefully at our business inventory and say where do we feel like we've got some flexibility to redirect away from our routine inspections, and focus on more engagement of our business community for the purpose of evaluation in that area.

The schedule -- it's kind of long -- we're not going to have this installed until summer, our design is close to done, but we're in winter and we don't like to change our storm sewer system during the winter, we like it to be available for storms, so it's not going to be installed until next summer. And then we probably want to take a year of no additional change in that area except for the full capture device to establish a baseline of how much

material gets collected when you don't do those other BMPs, and then spend the next year actually implementing and monitoring that full capture device to see how effective those BMPs are, and then look to 2016 as an opportunity to evaluate those results and extrapolate and expand implementation as appropriate across El Camino and potentially other retail areas. The El Camino strip is not exclusive to Sunnyvale, so this is information that could be valuable to other communities, as well, and would benefit if other communities were similarly situated to provide some type of assessment that would test BMP effectiveness in that area. Thank you.

CHAIRMAN MULLER: Thank you and thank you to the City of Sunnyvale. Next we'll get a little closer to home here, City of Richmond. Welcome.

MS. SCARPA: Thank you. I'm Lynne Scarpa, I'm the Environmental Manager and I run the Stormwater Program for the City of Richmond.

So Richmond is a city of over 100,000 people with a diverse population in both economics and culture. We've mapped our trash generation rates throughout the city and

performed field observations to verify the visual trash accumulation in these areas. To remind you, the purple is the very high rate, orange has a high rate of trash, yellow is medium, and green is low, or in a field observation would show no visual impact.

So if we zero in on the southern central area, in Richmond, trash generation is higher in the older areas where homes are smaller and closer together. And we placed a trash insert in a newly redeveloped area with townhouses serving low income residents, and monitored the trash and the trash accumulation rates with the BASMAA baseline trash monitoring. Our assessment averaged, with other catch basins in this category of land use and economics in the Bay Area, produced a greater than 50 gallons of trash per acre per year, that is the very southern purple square that you see in that map area.

CHAIRMAN MULLER: In that picture, there's no polystyrenes. Did you guys work with Dart on that or what?

MS. TOVAR: Richmond is really proud of the fact that we have a polystyrene ban and we've upped it to more than just food ware containers,

and also a bag ban. And we have noticed in one of our hot spot areas that the polystyrene -- well, we've noticed in all of the areas, actually, surprisingly for me because I didn't think it would happen in the shorelines, but that in all areas that the Styrofoam is coming down, and one of the most difficult pieces that Melody referred to is that, when you go to do a trash cleanup for these trash assessments, you pick up every single piece of trash, and one Styrofoam cup can break easily down into the small components, and what several of our creeks on the map for Styrofoam, for trash generation, was the fact that you had more than 100 pieces in a reach. We can find more than 100 pieces of Styrofoam cup in one small eddy. So if we're going to try and reverse it back out, now, I'm going to try and talk today about how we're going to get a city that's got a lot of -- probably more trash generation and we're one of the ones that's going to speak to today that has a pretty high impact that we have to deal with with our resources, so I want to talk about how we're going to look at that in terms of a visual assessment and go to other ways, but thank you

for the comment.

So there are four areas in Richmond which have high generation rates that are conducive to large full trash capture devices. But areas in the south southern portion of Richmond are flat and prone to flooding, and rainfall in these older areas often flow over significant distances before entering into a curb inlet or catch basin. So small devices can exacerbate flooding in these areas and large devices are difficult to place, mostly due to small areas of the right of way, complicated by many utility conflicts.

So I wanted to just speak to one aspect of one part of our program that we can use, I want to be able to have enforcement programs be a part of what we can put forward in our plans, as well as having them be measured for success. We do have successes, since the MRP has been put in place, we have two full time crews that drive routes through the high and very high trash generation areas and respond to calls from residents about illegal dumping and litter accumulation. And we know that how a community looks reflects on the actions of that community, it is the broken window theory that the look of

neglect snowballs into more actions, and in this case, more trash generation.

The crew's daily routes have removed that broken window and their success is that we have stopped the increase of litter accumulation and illegal dumping that was becoming very prevalent in our community. We follow that with Code Enforcement Officers who get to know the community and the sources of trash generation. In Pittsburgh and in Richmond, Officers have successfully been reversing trash that ends up in the gutters by getting to the violators, by knowing who they are, and getting them to remove the trash. In Richmond, we know we have been successful at reducing the amount of trash actually generated in some of our areas.

Another component in Richmond is the Illegal Dumping and Trash Issue Hotline. We have successfully engaged the community where we continue to see an increase in calls over the years, and some neighborhoods are self-policing and using the hotline removes the trash from the areas and we have seen trash generated in what might be an orange area, or come down to even a yellow or medium area, and in some blocks even to

a low or green area.

Richmond has also installed cameras and this summer has recently hired an IT specialist to monitor and maintain the camera surveillance, and this summer we averaged one violator caught per month. And more importantly, the areas that we targeted this summer resulted in 100 percent removal of the illegal dumping in those hot spots, and no additional sites springing up. Now, even though a lot of material that is dumped in an illegal hot spot may not make it into a storm drain, it goes back to feeding that broken window issue.

So how do we go from catch basins, from trash entering the MS4 through curb inlets and cash basins to only leaf litter that's entering into that curb inlet? How do we go from communities with gutters, which is part of the MS4 system, to that assess a very high trash generation, to communities with no visual impact of trash in the field assessments, or green areas on our maps? We do it by combining community engagement programs. And we have some successes in that. So because it is the community that is needed to address the broken window syndrome,

we're trying to change that culture of what is acceptable in their neighborhoods.

One community prior to the MRP brought Keep America Beautiful Campaign that was the Keep North Richmond Beautiful, and it did have an impact. Its biggest success was educating the community about the broken window theory about how they would change people's behaviors based on what they saw around them, what their neighbors were doing. It also created a resource book on where to go to get help from both agencies and the private sector.

Since the MRP, we have the One Block At a Time Program where Code Enforcement Officers identified blighted blocks and organized Saturday cleanups, and several departments showed up to clean up trash and beautiful those blocks. I handed out California poppy seeds with our litter campaign message on the back. The success was that the blighted blocks remained trash and graffiti-free for two to three months after the event.

Mitigation funds from local businesses have encouraged local groups to set up trash brigades, but mitigation funds have also

supported a voucher program for trash disposal -- Richmond in Economic Justice, Environmental Justice, and Richmond has the highest trash disposal rate, and yet it has people in these areas that have some of the hardest time paying those rates.

What was the success of this program? It was really that we were able to identify a champion that was able to head it. So moving forward, Richmond has in its Long Term Trash Plan a Love Your Block campaign that will combine all the aspects of these other plans and the successes to create a program with the goal of removing trash to no visual impact in the community or to the MS4.

So how do we assess the code enforcement and the outreach campaign? Since not all areas are conducive to trash capture, our program will utilize visual assessments because the baselines are established, as you saw in our maps. And staff and volunteers will continue to visually assess and document trash accumulation on the landscape. Using successful trash monitoring programs that come out of other beautification programs, we will by marrying them with the trash

assessment information we know from the Bay Area and other pilot projects even within our own City, as well as we do have a couple of trash capture devices we can rely on, we will assess the Love Your Block Campaign and make modifications to the campaign to move neighborhoods from high and very high generation rates to medium and even low or the green trash areas.

We need to be able to have visual monitoring as a tool for our program. In addition to full trash capture devices not being able to be used everywhere, we need to be able to have citizen support for their efforts and willingness to fund these programs. Full trash capture in the MS4 is not sufficient. Residents and business owners can rally behind programs that will remove trash at its source, out of their landscapes.

CHAIRMAN MULLER: Thank you, thank the City of Richmond. Palo Alto next, please.

MS. STRUVE: Hi. My name is Kirsten Struve. I work for the City of Palo Alto. Phil Bobel apologizes for not being able to be here, he is recovering from back surgery.

So this is our map. Palo Alto is a city of about 66,000 inhabitants and we're going to be focusing on what we've done downtown. This is University Avenue, our Trash Management Area 1, and Area 1A is the Business Improvement District, which I will be focusing on.

So in the entire Area 1, we have three times a week street sweeping, weekly parking lot sweeping, commercial code enforcement and inspection of restaurants, partial capture in the diversion projects that is part of C12, and then extensive resources and long term leadership using on-land cleanup. We also have a bag ban and an EPS ban.

One of these model programs is the Downtown Streets Team which was developed in 2005 for the Business Improvement District, and we realize this is pre-MRP, but it has served as a model for other communities that are now using a similar approach. This program has multiple benefit because it addresses homelessness and litter, as well as aesthetics of having a clean downtown. In exchange for housing and meal vouchers, homeless people clean the sidewalks, empty trash receptacles on weekends, clean parks

and garages. The City contribution is $95,000 per year and the remainder of that funding comes from grants in the Downtown Business Improvement District.

In a typical week, they have 400 person hours spent on cleaning debris by the Downtown Streets Team in addition to what City staff is doing. And we think that this is also an additional benefit because giving homeless housing reduces the amount of direct littering that may happen from a homeless encampment in a creek somewhere else. Housing really is the main solution for litter coming from homeless populations.

Other on-land cleanup activities we are doing downtown is that any restaurant that asks for an encroachment permit for sidewalk seating is required to keep the area clean per their permit. We have a once-a-month BASMAA certified steam cleaner cleaning the sidewalks, daily litter pick-up and parks and medians by city crews and contractors, three to four times per week sidewalk sweeping downtown using the green machine that is pictured there, weekly parking lot sweeping and tree well cleaning, and twice

per week litter pickup at parking lots.

Our plan for the future is to explore using these methods in our other main business area, California Avenue. And we prefer multiple benefit solutions towards trash that the public can actually see because, in addition to preventing litter, it shows that we're taking care of our city, whereas a full trash capture device, they don't necessarily even know it's there.

For our Trash Assessments in May, this is how our downtown looked. We did not find any litter in the catch basins or anywhere downtown in the Business Improvement District, but we did leave our map the way it was generated by the model because we know that trash is being generated and being picked up, but we feel like we've already done a good job.

In terms of what our creeks look like, Matadero Creek in 2007 had a high visual impact from trash, and it's shown on the right, for our pre-assessment in 2013, prior to coastal cleanup. So we have reduced the visual impact. We are still finding trash -- that picture on the bottom shows how much trash we pull out of our hot spot.

Many of those items are dumped directly by fisherman or construction crews.

So we were also engaged in a pilot for trash booms since 2009, we have an agreement with the Water District on Matadero Creek, which is a concrete channelized creek, and that pilot was successful, so we have renewed our agreement with the Water District to have trash booms in both Adobe and Matadero Creek, and this agreement runs through 2022 and we'll be leaving in a boom from April 15th to November 15th, or longer, to December 15th, to capture the first flush. We cannot leave it in the wet season due to concerns about flooding.

The profile from this boom shows that many of the materials that we found in the first rainstorm right on Coastal Cleanup Day, right after we had cleaned off the boom, weren't directly deposited into creeks, there are a lot of aerosol cans from graffiti, a lot of balls, and a lot of Styrofoam peanuts. They may have traveled to the storm drain system, but we're not sure where all of it is coming from, so it is difficult to say that progress in our hot spots is related to what we are doing in our city

because our hot spot is close to Highway 101 and does experience direct dumping, so we look forward to participating with the other Permittees on assessment methods that will show how we are doing within our town because our hot spots are so variable. Thank you for the opportunity to speak.

CHAIRMAN MULLER: Thank you. Now we're really close to home, I believe it's Oakland next here – oh, I'm sorry, did I miss one? City of Walnut Creek -- Oakland?

MS. ESTES: Yes, of course, Oakland would follow the City of Palo Alto.

CHAIRMAN MULLER: I'll be very careful and no comments.

MS. ESTES: I'm born and bred Palo Alto, but now the Oakland champion, so I know both.

CHAIRMAN MULLER: You can have all the time you want because I also was born in Palo Alto.

MS. ESTES: Oh, good.

CHAIRMAN MULLER: A long time before you.

MR. MCGRATH: I –

CHAIRMAN MULLER: Were you born in Oakland?

MS. ESTES: No, he's going to comment that he doesn't have it in his packet, and you don't have it in your packet, and I apologize for that, there was a little bit of an email mix-up, so I'm sorry for that, and I can send it to you later and ensure that you have it.

So I'm representing the City of Oakland. I'm not going to deny we have a problem. Chris, on his lovely map showing the entire Bay Area, if you looked at that you saw the big red blob -- we're the big red blob. I'm Leslie Estes, City of Oakland.

So here's a closer look at Oakland. We're still in the process of looking at our map and figuring out where our problem areas are. A lot of it, we already know where the problem areas are, but just to map it really precisely, we've done a lot of ground trothing and plan to continue to do more.

Today is just a little snippet of the things that we have done. We have successes, but we have a long ways to go. Like I said, Oakland is going to be sort of, when it comes to trash, we've got -- I don't want to say the biggest problem -- but we definitely have the most

diversity of trash problems. And trash is really important to us for many reasons, not just water quality, although that's what's in our heart and what we really care about, but we also care about the crime connection, we also really care about the quality of life in Oakland. It's a really beautiful, wonderful city, and we don't want trash impairing it. So let me just talk about a couple things that we have done.

Full trash capture, I think you are well aware that Oakland has done quite a bit of full trash capture, specifically CDS units have been our big bang, this is the low hanging fruit as far as we're concerned and it's really -- we got a head start because Lake Merritt was listed for trash back in 2004, so we started looking at this a long time ago. We currently have installed 20 plus full trash capture devices, nine of which are large CDS units. The photo you're looking at there is one of the largest CDS units on the West Coast and we installed it in East Oakland in a very high density, high retail, high trash generating area. That unit itself cost about a million dollars. The total at this point, our CDS units are adding up to more than a thousand

acres, which is actually four times what was required in the MRP, but that's not necessarily all that's driving us, we're just looking for all of the tools we can possibly use. We've spent about four to five million dollars so far in capital investment. But it really isn't enough and, you know, there are feasibility issues, there are problems with issues, we're looking at screens, we've been mapping areas where we can put screens in instead, we can't put CDS everywhere, our underground system isn't large enough. We have conflicts with sewer lines, utilities, and the denser the area, the more trash there is, the more conflict we're going to have underground or competition for underground real estate to put these things in. And the other is that CDS units, they really are great at collecting the trash before it gets to the waterway, but the problem is you still have the trash in the street, and you guys come here, you walk around the street, you're seeing the trash on the sidewalk, and you're thinking Oakland is doing nothing because you don't know what's going on underground, and that's a real flaw. We're never going to fix that flaw, but we're just

going to continue to try to use all the tools that we can.

So I want to talk a little bit about Lake Merritt. We have six CDS units at Lake Merritt alone. We also have booms, we have weekly cleanups, we've been throwing all our tools at this just to see if we could make a difference, and I'm not sure if this really reflects a difference. I think if you went out and did a visual assessment, you would say there's a difference at Lake Merritt. But from a count perspective, in 2000 to 2005, we were getting about 40,000 to 50,000 pounds of trash collecting on a yearly basis, and then from 2010 to 2013, we're looking at a reduction of 20,000 to 27,000 pounds of trash. Now, is that because we're collecting less trash because we're doing less work? No, we know that we're doing more work and we're collecting less trash. So what's contributing to that? CDS units, public education campaigns, source reduction. I would really beg to differ that foam and plastics don't count, they do, those are the ones that we're scared about, those are the ones that harm, those are the ones we're going to target, and we have

seen a difference in the reduction since we've had bans. Do we need to increase our enforcements of bans? Yes, and we plan to.

But I also want to say that Lake Merritt, we have a ways to go, but if you look, there's a vast difference. It was done without monitoring, without measuring, without reports, all of those things, it was done because we needed to do it and because we did have a Cleanup Order against us, but the thing is we still did it, and we did it without measuring, monitoring, no science involved, we just threw all our weapons at it and started cleaning it up.

And I don't want to discount cleanups and volunteer cleanups, I know they're really hard to calculate and they're hard to track, and they're very difficult to control. But we have a really robust program that we've been growing and the results just in 2012, we have hundreds of sites, we have weekly cleanups, we have a cleanup almost every single weekend at some site in Oakland. We have over 16,000 volunteers, we have close to 60,000 hours, these are just the hours we track, we don't know for sure, 60,000 hours in volunteer hours and, you know, we're guessing at a minimum

that we're collecting -- through volunteers -- we're collecting at a minimum 150,000 to 200,000 gallons of trash. And, no, that's probably the medium density of trash, it is hard to measure, I agree with previous speakers, and we do need to find better measurements, I just don't want to go all the way that that's all we're doing is measuring because this is a really important thing and in a resource strapped city like Oakland, the volunteers, has the benefit of cleaning up trash, but it also is a long term sustainable behavior change. When people get out there and they see people cleaning and they pick up trash, it's a long term change and that's what we really are aiming for.

Street sweeping is our last sort of what we're really studying. The upper right map is our in-progress trash map and the lower map is our current route map. We want to really look at these two maps together and say what can we do to look at our routing of street sweepers? What can we do to look at our operations? How can we target our operations, improve our operations? Maybe conduct some performance audits, and we have GPS on every street sweeper, but we know

that the street sweepers are not performing up to optimal abilities. We also want to look at where curb areas and storm drain inlets -- are we pushing garbage into those inlets? Can we look at retractable screens? So we're piloting those things. We feel like there's a lot of bang for buck in street sweeping as an existing program, but it just isn't a program that's targeted to trash, and we need to completely overhaul it. So just in general, I think there's just this huge toolbox. I have talked about just this small little snippet of the things that Oakland are doing, we've got a lot more to do, but a multi-pronged approach for someplace as difficult as Oakland is the only way to go. I think measuring results is very difficult. In some areas, we can really collect data, in others it's really going to be documenting the kinds of works that we're doing and doing field assessments, so that's about all I've got.

CHAIRMAN MULLER: Well, I can tell you, with your energy, the City will get cleaned up someday here, let me tell you. You ought to share some of that with the rest of the people around –

MS. ESTES: Well, I share the energy with a lot of passionate people in Oakland, and so it's nice to be a part of that.

CHAIRMAN MULLER: Congratulations. Good job.

MS. ESTES: Thank you.

CHAIRMAN MULLER: Next will be Walnut Creek, I believe.

VICE CHAIR YOUNG: I so apologize, I had a hard stop on my 4:00. I did hear your presentation and the presentation that's going to be last at the Estuary Institute – I mean the State of the Estuary, and I was very impressed, and thank you; I'm so sorry I have to leave.

CHAIRMAN MULLER: The Vice Chair and I just talked and we will invite everyone back again in December if you think we're missing a few little -- another card, okay -- if we're missing a few comments here, as long as we're not repeating, and I'm sorry I missed it.

MS. PERKINS: That's all right. I promise you, I'm not repeating.

CHAIRMAN MULLER: The men will stay.

MS. PERKINS: The men will stay, okay.

CHAIRMAN MULLER: Whether we want to or

not.

MR. MCGRATH: For a while. I do have another meeting tonight.

CHAIRMAN MULLER: And my wife, I just called her, she's going to have to load the truck for Farmer's Market, so -- tough to be a farm wife. But anyway, welcome.

MS. PERKINS: All right, thank you. Good afternoon. My name is Rinta Perkins, Clean Water Program Manager for the City of Walnut Creek. It's an honor to be here and it's an honor to hear Walnut Creek mentioned several times in today's presentation.

So we are smaller in size compared to Oakland, but we do have our own set of trash issues. This map shows all the trash management areas for the city and we are going to zoom in to Trash Management Area 1, which is our downtown core area and its surrounding area. Within that downtown there is a trash hot spot. We have done our Trash Hot Spot Assessment and Cleanup since the permit was adopted. And to the right there is a table showing all the lists of activity we have selected to reduce the trash problem in our city and despite our maintenance activities, to

reduce trash from entering, or to prevent trash from entering our system, we still see areas with trash and those are trash coming from windblown or illegal dumping and homeless encampment. So my presentation today is to share with you our experience with public education and engagement to mitigate the trash hot spots, as well as to share our challenges.

Trash Hot Spot 2 is located adjacent to Civic Park in our downtown that is the shaded area on the top you see on the right picture. And that area is also called Civic Park East. The meandering blue line you see in the middle that runs through the park is our namesake, Walnut Creek, it is the only segment of the creek that is within our public right of way. And the creek areas run through most of our downtown area and the creek is divided into two segments, you see the Civic Park East on the top and the bridge connected to the lower part, which is where most activity takes place, over 500,000 people on average each year come and visit this park, to engage in the library, or participate in a special event at the Community Center, Art Studio, I mean, you name it. But very few people

venture past the bridge to go and visit Civic Park East. These are the pictures of Civic Park East some years ago, a lot of trash accumulated from illegal dumping and homeless encampment. Our crew would go up there each year to clean up, only to have the community come back and the trash problem recur.

So what is our solution to this trash hot spot? We believe that the solution must contain three elements, 1) you have to put in the investment to improve the site, 2) we have to make it visible so you can bring people to the site through activities or programs, and finally, we must engage our community to take on the next challenge, and that is to care for our environment.

Our City Council adopted many years ago master planning for our creeks, as well as for Civic Park, and one of the projects identified is a creek walk. And so in 2011, our City Council appropriated $400,000 from In Lieu Parkland Education Fund to build creek walk at Civic Park East. This is that first element of that approach. The project involved clearing, constructing meandering pedestrian pathway to

bring people closer to the creek, install interpretive signage along the pathway. We also installed Oak Woodland Demonstration Garden with native plants to show people the IPM concept, less toxic gardening. And as with any new project, we too are concerned with long term operation and maintenance. Walnut Creek experienced financial hardship, we have to let go a lot of our temporary parks workers, so we are now just down to one and a half full time employees. So to sustain this project, we must rely on other resources.

The second element of our approach is to make Creek Walk visible, and that is to attract visitors to programs or activities. We offer an outdoor watershed classroom, over 400 students attended this classroom since 2012. We also offer a gardening workshop, guided tours, all kind of activities. So as you see more and more people come to this site, we begin to see less and less people from the homeless community loitering in the area.

The next one, the third element, is public engagement. Creek Walk has opened up a lot of opportunity for our community who wish to

volunteer. In the past 20 years, the focus of our annual creek cleanup has been to remove trash from our creek, but now more volunteers are working on restoration projects such as weeding, pruning, planting native plants and removing invasive plants. The picture on the right, the bottom one, that's our Council member, he gave a presentation at the Trinity Center to the homeless community on impacts of trash in our waterways. And I'm very pleased to report to you that, for the first time this year, a number of people from the community came out and helped with the trash pick-up in our creek.

So what is the end result of this effort? Well, this is a unique case when you actually can tie in the immediate result to the receiving water. The amount of trash, as you see in the graph in the middle, that's for the hot spot 2, has shown a decreasing trend in the amount of trash that's been removed. Unfortunately, we may not be able to replicate this effort to other hot spots or any other area because of the limited funding.

So I will share with you some of the challenges with other outreach efforts. While

Creek Walk is a successful story we love to share with you, we continue to struggle with other outreach efforts. Cigarette butt litter is a huge problem in our downtown. Last year we launched a multi-year campaign to educate our general public, as well as partner with bar and restaurant owners to install receptacles at strategic locations. The limited survey that we found show very little impact, unfortunately. For a huge amount of resources we put in to educate a small segment of our target market, the result has not been promising. But, coincidentally, early this month our City Council adopted one of the more stringent second hand smoking ordinances. So we hope that -- I don't know whether you can use this as a source control, but we are going to see whether this is bigger incentive perhaps for people not to litter or drop their cigarette butts. So we are going to report back and we're going to assess the result of these two measures.

And the last one I want to share with you is Special Events. Special Events are huge in Walnut Creek. Every weekend you almost see any sort of special event, and the trash that is

generated for these special events is a problem. So early this year, we began to update our Special Event permitting process. While it used to be a free permitting process, now organizer must put in at a minimum of $200.00 refundable deposit per day to monitor and manage trash generated from their event. This actually has generated some success because we start seeing significant amount of litter after each special event, it does drain on the staffing time because we have to administer this process.

So we still have a long way to go in resolving our trash problem, but we know that public education and engagement is one key to a comprehensive success. So thank you very much.

CHAIRMAN MULLER: Thank you. We have a special event, just for example, Pumpkin Festival, actually the nonprofits are paid to pick up the litter, and it really works well. And our waste management company, Republic, provides the dumpsters, so we just boom, boom, boom, and by Monday morning you don't even know there was trash in the area. Last one.

MR. FUKUDA: And I'll try to be concise to get us out of here.

CHAIRMAN MULLER: The big City here, the big City.

MR. FUKUDA: Well, thank you for -- my name is Napp Fukuda, Deputy Director, City of San Jose Environmental Service Department. And, yes, I'm here to represent, in fact, one of the largest cities in California, the third largest in California, 10th in the country, and certainly with that size comes some certain challenges of our own. You know, the development of San Jose over time, you know, perhaps not ideal. So I'm not just talking about scale and the challenges we have to encounter with trash, litter in our environment, but really complexities, as well. Like Oakland, we have a large diversity. This is our Trash Management Area Map that we'll be submitting in our Long Term Trash Plan, and going back to what Tom said, you know, it's just sort of this balance of over generalizing a map, yet keeping it specific enough to really acknowledge the complexity of it all. I mean, certainly we're down to -- we have about 40 Trash Management Areas is what we're looking at now, but each one of these in and of themselves is almost a small city right there, where there's

various land uses, various income levels, I mean, just so many variables of input into how trash and litter is generated within a city. You'll see here a million people, 170-square miles, which is almost over 114 square acres, 30,000 storm drains, so that's sort of what we're dealing with. It's a complex issue, but something that I think San Jose has not shied away from, nor many of my proceeding colleagues and their jurisdictions. I think a good faith effort of many of our jurisdictions moving forward is what you've heard before me, and I think what you've seen here, not just to implement programs, but to make a best effort to try and monitor some progress. So one thing I'm here to speak about, one of the programs that we initiated, was our bag ban. Certainly, San Jose was not the first to be out there, but San Jose, we feel, you know, we were one of the first large cities to implement it retail-wide. I won't get into the details, it's very similar to every other bag ban out there, but the level of effort to get that over the finish line, if you will, took us two and a half years, almost three years pre-implementation of that program, and certainly

once it was implemented, it took us another year to get that outreach done to our businesses, to our community, to everyone out there. But when I talk about a level of effort, it's not, again, to complain about the effort there, but it's sort of set up, you know, when we put that level of effort forward, we want to have some level of detail to show that there is some progress. I mean, are we doing these things just because, or are we doing them to get some benefit?

So when we first put this out, we were charged not just by ourselves, but certainly by our elected Council to have some sort of progress monitoring program. So what we did was, you know, we wanted to answer three question, were the retailers able to transition to this, because as we got a lot of feedback that it was going to have a big economic impact and they wouldn't be able to do it. Another was, were the customers, the residents, were they going to be able to transition? Was their behavior change going to be able to accommodate that? And lastly, which is the ultimate goal, which is what I'm hearing here, which is all of our goal, I think, you know, are we getting benefits in the creeks,

bottom line, so those are our three kind of questions that we've asked ourselves and we embarked on developing a program to measure that.

So our first was looking at businesses. You know, were they able to transition? Were they in compliance? So we went out and looked at -- we have 10 council districts, went to every council district, picked out two or three areas, assessed small, medium and large facilities, also looked at our four large shopping centers and did the same there. We didn't engage customers, we just monitored what they did, what they came out of the retail businesses with. Did they have a single-use plastic bag? Did they have a paper bag? Did they have no bag? Just things that we actually used in other parts of our surveys, as well, too. Essentially, we found a 98 percent compliance rate in our most recent observation, which just occurred this past August, but essentially from day one it was well transitioned, the businesses were able to transition, I think the first year was 95 percent, next assessment later that year was 96 percent, and now 98 percent, so all within the same average.

One unique thing that I call out, the observation that I'll call out, was going into this we had thought that there could be a transition to thicker plastic bags, which by definition is reusable, and certainly over the first two observations, we did see that, so we had contemplated including that restriction of that product in our updates; however, our most recent data suggested that it dropped back down to 80 percent. So at the moment, although we haven't written it off, we are not going to be increasing the ban to the thicker plastic bags, but we'll certainly continue monitoring that over time to see if it becomes a problem.

Behavior change. So we set out to do a qualitative assessment intended to discern any observable effects or trends related to the ordinance. So although we acknowledged that the confidence of the data as a definitive quantitative assessment may not be there, the qualitative trends you'll see here show very strong indicators that these trends are likely occurring. You notice here the average use of single-use bags went from three per customer to a 90 percent drop, to .3 per customer, reusable bag

use increased from four percent to 62 percent. We saw a number of customers or residents using no bags at all, they'd be coming out with a cart of material, or just collected in their hands. And then one really important one was paper bag use appeared to drop, but I think more importantly is that we did not see an increase because that was another thing, that was part of the purpose of the $.10 fee, to ameliorate that potential increase. Observations have shown that, you know, perhaps that isn't happening.

And the creeks, again, that's what we're talking about: have we seen conditions in the creek improve? We did pre and post assessments at 10 of our hot spot cleanup areas, did a litter count, bag count, and as you see here, we've seen a 59 percent decrease in our street litter, as well as a 60 percent decrease in our hot spots.

CHAIRMAN MULLER: Quick question.

MR. MCGRATH: Now, nothing that we've seen indicates that bags, single bags, are 60 percent of the load, so I'm guessing here that the education effort to inform the public of this actually was successful in reducing the other forms of litter? Was that your conclusion? Or

you just got the data?

MR. FUKUDA: Well, we got the data, the 60 percent reduction not in load, not in overall trash load, but overall bags.

MR. MCGRATH: Oh, in bags.

MR. FUKUDA: In bags, yes. And going back to certainly -- well, I'll just go to the end just to clarify and I'll follow-up.

MR. MCGRATH: Yeah.

MR. FUKUDA: So one other positive thing that we've been getting feedback from our community, we have a number of community groups out there doing litter pickups themselves, this was just from one group that was out in 2007, collected bags for like one worker in two hours, and collected that number of bags, and you'll see in 2013, you know, they had a significant reduction in the amount of bags. So we seem to get not just our data, but some anecdotal information from our community, as well, that they're seeing the reduction in these bags. And going back to, you know, why bags? Why Styrofoam? San Jose's position is, and I believe it is with other jurisdictions who have this ban or phase-out, is that we're trying to deal with a

uniquely problematic kind of material. It may not bring down the load completely, but as you said, Board Member McGrath, you know, it's a pervasive and persistent product that, once it's out into the system, into the collection system, storm system, as well as the creeks, it breaks up in little material which it's virtually impossible to regain, even in the cleanup, whereas all the alternative products are more benign, whether it's paper, it'll degrade over time, or even rigid plastic where at least there's still an opportunity once it gets into the system, where it's still intact and whole, we can still collect that material at some point. Further, to kind of clarify the difference between a litter audit and an in-stream or in-storm drain system audit, you know, we have a similar audit where it appears that the increase in trash, or at least other products, increases on the street, absolutely that's what happens. But if you do that similar in-line assessment, generally speaking within the collection system, which is a wet environment, you'll find that those materials degrade over time, so they sort of disappear in the system whereas the EPS will

stay consistent throughout. In fact, as a proportion it goes up. So that's sort of our observations. Like I mentioned, we would not lean our hat that this is a statistically significant dataset, but certainly the trends that we're seeing seem to be so significant that they strongly indicate that something is happening. And we look forward to working with BASMAA and our other partners on getting -- kind of formulating that a little better, getting more statistics behind it, and see what happens there.

CHAIRMAN MULLER: Thank you. And it's my mistake, I misplaced a card in the shuffle here, so our last speaker, and I request you all kind of stay, this individual was patient enough to sit through everything, so Craig Johns, you're the last one and I apologize for the shuffle of cards here.

MR. MCGRATH: Remember, you're last.

CHAIRMAN MULLER: We'll give you a minute and a half, Craig.

MR. JOHNS: As Reese Bobby once said, if you ain't first, you're last. My name is Craig Johns. I'm here on behalf of the Partnership for Sound Science in Environmental Policy. The

evening is long and I don't really mind, and so I'll be brief, waiting through, this was actually an unbelievably informative workshop. I want to salute staff, as well as the Board members and everyone here who sat through this. I was incredibly educated, in part on all of the things that the Bay Area Stormwater Agencies have been doing, that I hadn't heard about. So congratulations to all of them; it's not a surprise, this community has always been at the forefront of figuring out how to fix a lot of these problems. Maybe we're a little bit behind LA because they started a little bit earlier, from a regulatory standpoint, but --

CHAIRMAN MULLER: They have more trash anyway.

MR. JOHNS: They have a few more people too. I just wanted to make three brief points, one of which we'll close with Mr. McGrath's opening anecdote. The first point I wanted to mention, the thing that becomes fairly clear, is that there is a need for a standardized methodology for measuring trash, and I think even Mr. Summers acknowledged that. Without it, your staff, this Board, the public, and all the MS4

taxpayers in this region that are paying for all these programs, are not going to be able to figure out whether or not their investment is rendering the kinds of benefits that we hope and expect them to render.

Your staff routinely imposes standard methodologies on all kinds of dischargers, point source dischargers, and so forth, so the notion of coming up with something that everyone is going to comply with shouldn't take very long. I heard Mr. Summers, or at least I think I heard Mr. Summers say that with this Prop. 84 grant, they're going to be working on it over the next three years to come up with some sort of standardized trash measuring methodology. It doesn't seem to me like it should take that long. But, you know, there are a lot of experts out there far smarter than I am on this.

Secondly, there needs to be standards for trash capture device maintenance. One of the things that stood out in the Regional Board's March 2013 letter to the BASMAA agencies noted -- and I quote here - "No Permittees (annual reports) that were reviewed reported any maintenance information." If the BASMAA agencies

aren't required to report the frequency and the types of maintenance that they're performing on these physical BMP devices, again, how is the staff, the Board, and all the taxpayers going to figure out whether or not these things are being maintained in a way that the manufacturers intended them to be? Because if they're not, they're not going to work. We do know that.

The third point, and this leads to my time hopefully with Mr. McGrath's anecdote, is it seems to me that it's time that we all try to get a little bit more creative on the real issue here, and that is funding. I think we heard it from all the agency representatives that spoke here today, and Mr. Summers as well, you know, in a perfect world with infinite funding, we would have daily trash cleanups and we'd have not 45,000 physical structures like LA apparently does, but we'd have 150,000, or however many we need, but the issue is where is it going to come from. I'm not sure that I necessarily have the answer to it, but it seems to me that there's an opportunity to try to figure out how to create synergy between the manufactures of these devices, whether they're full capture or partial

capture, working with the MS4 agencies and perhaps their waste collection franchisees, to figure out how to incorporate another angle to trash pick-up, instead of just garbage cans and recycling cans, figure out how to install these things and maintain these things in a cost-effective way that's spread out a little bit more fairly amongst all the people that live in the Bay Area.

And lastly to that point, Mr. McGrath, you mentioned that you're on the water going 31 miles an hour? Or maybe --

MR. MCGRATH: Thirty-one.

MR. JOHNS: Thirty-one miles an hour, and you hit a trash bag and maybe you don't know what that's like unless it's happened, and no one -- and I don't mean to belittle your experiences out there because I respect them greatly -- but what we don't know is where that bag came from. And what my point here is, and maybe it doesn't matter in the end, right? Because that bag is there and it's affecting the environment, but maybe that bag has come from where a lot of other pollutants come down and through the Bay, and that is up in the Central Valley Region. Now,

you all probably know here that the infamous Water Bond is being renegotiated and it seems to me – and there's going to be a lot of money in that bond for stormwater activities, and it seems to me that the Bay Area stormwater agencies and their advocates in Sacramento might want to make a bigger push to get some of those stormwater-related water bond funds that can be allocated towards these kinds of programs because otherwise that $5 million that came from the Feds and the Prop. 84 -- I think it was a million or two, I can't remember exactly -- that's just going to go away. And then it's either going to fall on the ratepayers and the taxpayers, maybe it will fall on the people who buy that Styrofoam cup of coffee, or paper cup of coffee, but it seems to me that the Water Bond might be an opportunity, if I can use that phrase, to try to get some more money into this program, not just here in the Bay Area, but up in the Central Valley, too. My suspicion is maybe, Mr. McGrath, you've hit one of those bags that's floated down the Sacramento River and through the Estuary while you've been out on the Bay.

MR. MCGRATH: Well, the same thing

happens when you hit a striped bass, I've got to tell you, but I'd much rather hit a striped bass. Just -- I don't know if all of you know that Mr. Johns was a Board member here and I got permits from him on many occasions, and we share a certain philosophy which I'll remind him of, certainly some of the cost for this should come from the general public because of the general public benefits; but certainly also, in the true conservatism which I know you and I share at some of our true core, some of the cost should be reflected in the cost of the product.

MR. JOHNS: I suppose there is some room for that, but when you think about it, if you go in and buy your -- whether it's a Styrofoam cup of coffee, or your paper cup of coffee, and those jurisdictions where Styrofoam is no longer available for your coke or coffee, if you're having to pay a tax to use that product to enjoy that while you're driving to your next location, or whatever, but you actually finish the drink that you're purchased and paid the user tax on, and you actually throw it away, or recycle it, then you're being actually overtaxed. Really, we've got to figure out a way to get to the

people that aren't complying with the litter obligations.

MR. MCGRATH: Compliance makes me feel good, so I'm okay with it.

CHAIRMAN MULLER: And then you'll be contributing to the point --

MR. JOHNS: Compliance uber alles, I guess. Thank you for the opportunity to be here. And thank you for the chance to go last.

CHAIRMAN MULLER: Thank all of you for your energy today to stay and, as we stated earlier today, and the Vice Chair is very engaged in this, and Tom and Dale and Bruce, and our legal counsel that came all the way down from Sacramento today, welcome to the Bay Area here today. No timber or marijuana growers in the neighborhood, maybe some. We're going to continue this again in December and hopefully -- you know, one more quick thing -- we didn't wake up in the morning and say, "Let's put this trash thing out there," this is something that we all have to work through, that's my personal opinion, it's something that's for the betterment of the environment, one of the reasons we're appointed to these positions is to try to work with all of

you to do this, it's not just us against you, it's all of us working together. So that concludes this wonderful day today.

Item 12. Adjournment to next Board Meeting - December 11, 2013.

(Adjourn at 4:45 p.m.)

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